Jo 10 '47

JUNE, 1947

THE Refrigeration INDUSTRY

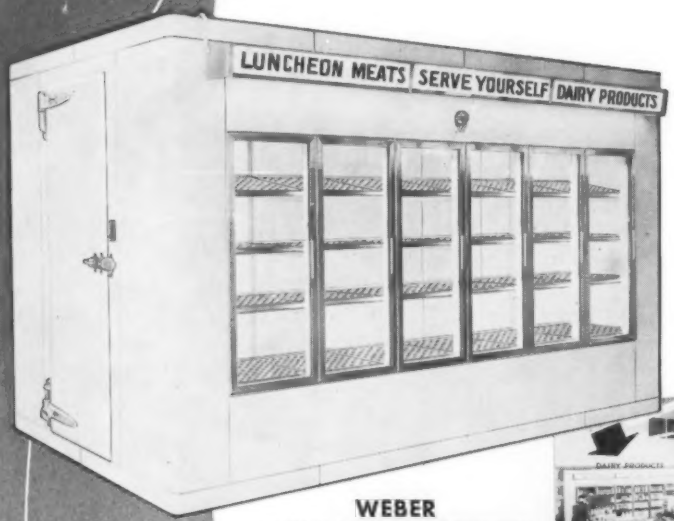
AIR CONDITIONING EQUIPMENT

MERCHANDISING ★ INSTALLATION ★ MAINTENANCE

Circulation of This Issue 28,134

Another Unusual Development by WEBER

Designed for modern merchandising, here is an unusual development in self-service refrigerated storage. A product of Weber engineering and research this equipment is designed to display more and sell more.



WEBER WALK-IN REFRIGERATOR with new full-view self-service doors

WEBER Showcase & Fixture Co. Inc.

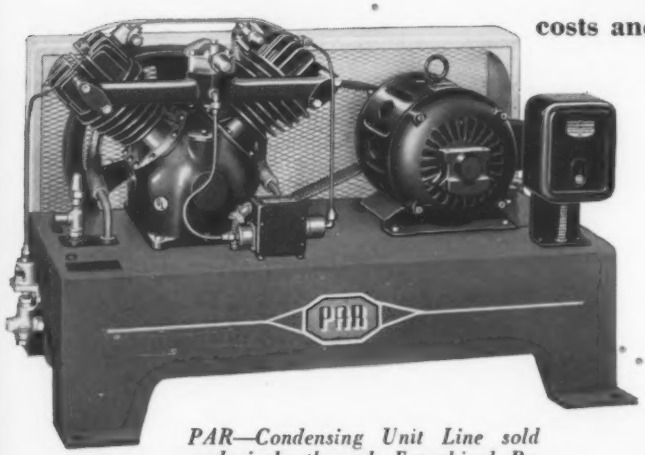
5700 Avalon Blvd., Los Angeles, Calif.

LOS ANGELES • EL PASO

Pioneers in Commercial Refrigeration Industry

PAR REFRIGERATION UNITS

are designed and built in a wide range of models and sizes to give you dependable economical refrigeration. Air-cooled and water-cooled . . . close-coupled and heavy duty type . . . and in sizes from 1/6 hp to 5 hp. Regardless of your requirements, there's a Par unit for "tailored" installations that give lower operating costs and longer trouble-free service.



PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Equipment Wholesalers!

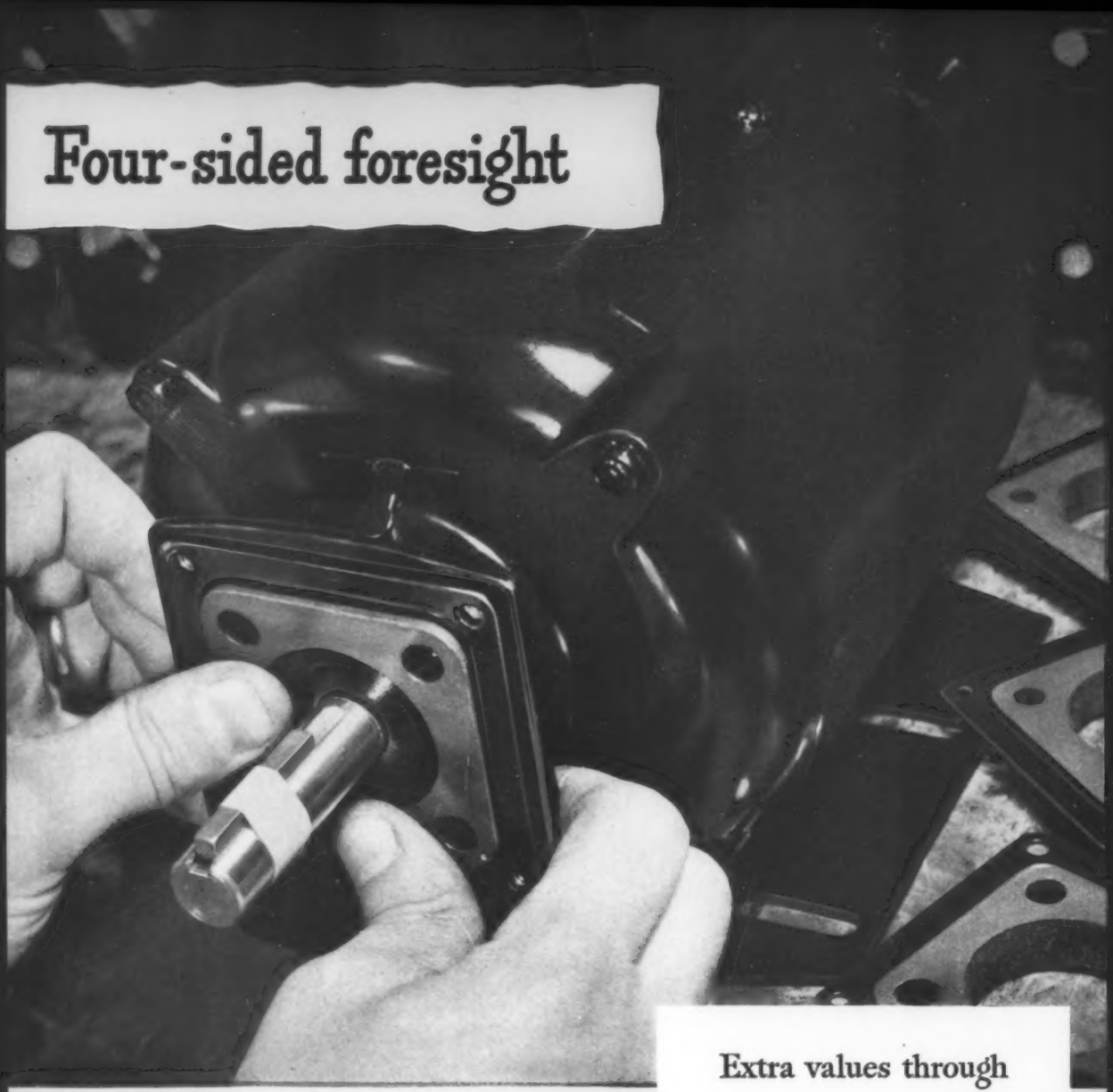
Ask your Par wholesaler about Par or write for illustrated Catalog R-98

. . . By Comparison — You'll Buy PAR

Lynch Manufacturing Corporation

General Offices, Toledo 1 • Factory, Defiance, Ohio, U.S.A.

Four-sided foresight



Extra values through

JACK & HEINTZ

Mass Precision

The rubber "shock absorbers" that support Jack & Heintz motors are *square.* There is no danger of the motor frame rotating in service.

This four-sided design puts Jack & Heintz fractional horsepower motor frames in their intended position, and keeps them there permanently . . . for years of *quiet, dependable operation.*

JACK & HEINTZ PRECISION INDUSTRIES, INC., *Cleveland 1, Ohio*

THE Refrigeration INDUSTRY

VOLUME 4, NO. 6

THIS MAGAZINE has no official affiliation with ANY group, society or association.

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CCA

THE COVER . . . Air cargo men unload a shipment of daffodils from a refrigerated plane directly into a special mobile refrigerator unit. By means of such refrigerated trailers, now in operation at key United Air Lines terminals, flowers and other perishables can be kept "garden fresh" from the time they are taken to the air freight terminal until they are picked up by the consignee at their destination.

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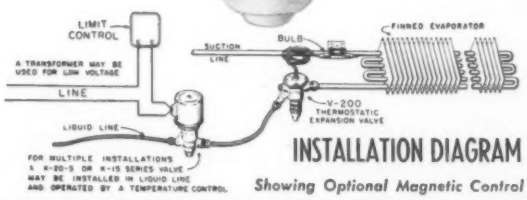
Acceptance under the Act of June 5, 1934 at Milwaukee, Wisconsin, authorized March 26, 1947.

For Efficient Refrigeration Control

New K-20-5 ELECTRO-MAGNETIC VALVE

CHECK THESE FEATURES

- Die-Forged Body
- Hardened Steel Needle
- Corrosion-proof Internal Parts
- Gasketless Construction
- Integral Mounting Feature
- Moisture-proof, high temperature
- Single or Dual Voltage Coils


LIMIT CONTROL
A TRANSFORMER MAY BE USED FOR LOW VOLTAGE
LINE
LIQUID LINE
FOR MULTIPLE INSTALLATIONS 5 K-20-5 OR K-15 SERIES VALVE MAY BE INSTALLED IN LIQUID LINE AND OPERATED BY A TEMPERATURE CONTROL
SUCTION LINE
BULB
FINNED EVAPORATOR
V-200 THERMOSTATIC EXPANSION VALVE

INSTALLATION DIAGRAM

Showing Optional Magnetic Control

For Freon • Methyl Chloride • Sulphur Dioxide

THIS VALVE is specifically designed for control of refrigerants and may also be used for controlling air, water, gas, light oil, etc. Controls suction lines or hi-pressure liquid lines. Assures tight shut-off for fractional tonnage installations. Bronze and stainless steel internal parts.

FOR COMPLETE SPECIFICATIONS on automatic temperature, pressure and flow controls, write for Catalog, or contact Factory Branch or Refrigeration Wholesaler near you.

GENERAL CONTROLS

801 ALLEN AVENUE — **GLENDALE 1, CALIF.**

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
HOUSTON • SEATTLE • SAN FRANCISCO • **DISTRIBUTORS IN PRINCIPAL CITIES**

EMPTY... so are a lot of "Freon" cylinders empty. We know—because they haven't been returned. These empties *could* carry a lot of "Freon" . . . help supply you and your customers promptly when it's needed. And they'd ease the still-serious shortage of new cylinders.

That's why we again ask this favor: Please take time out—now—to inventory every cylinder on your grounds. Round up the empties for return today.

SHIP EMPTIES, FREIGHT COLLECT, TO:
Kinetic Chemicals, Inc., Carney's Point, N. J.

FREON safe refrigerants
"FREON" IS KINETIC'S REGISTERED TRADE MARK FOR ITS FLUORINE REFRIGERANTS AND PROPELLENTS
KINETIC

AT SAN FRANCISCO

The Frozen Food Industry

IT CATCHES EVERY EYE AT EVERY ANGLE...

Any way you look at it, the new FRIGID-FREEZE three-dimensional display shows food in its most life-like, appealing, "buy-me-now" form! So startling it makes you come closer—and as you do, *it changes shape!* It exerts every bit of the sales-appeal in deliciously presented food—customers *stop to look and stay to buy!*

Your products have depth, realism, full-vision sales appeal!
Brilliantly lighted, full color, life-like products—interchangeable!
Brand-name and package get "can't-miss-it" display.
DELICIOUSLY FRESH FROZEN FOODS
Prices and products available go here—easy to read, easy to replace.

HOLLYWOOD at its best never made a picture as real, as true-to-life as this display. For it's *more* than a picture—it has depth, body, perspective! So natural you're tempted to reach out and touch the food. It's done with a series of sparkling full color 3 dimensional photographs, ingeniously arranged and brilliantly lighted from behind.

This great new superstructure *clinches* sales with indirectly lighted, easy-to-read price cards. It's new, it's *exclusively* FRIGID-FREEZE, and it's available *now*—complete with cabinet or separately for mounting on your present FRIGID-FREEZE Cabinet!

Stopped...Looked...and Cheered!

ANOTHER FRIGID-FREEZE EXCLUSIVE!

The most revolutionary merchandising method ever found for selling frozen foods!

NEW FRIGID-FREEZE 3 DIMENSIONAL DISPLAYS

BRAND-NEW MULTI-PURPOSE CABINET...

FOR FASTER SERVICE, MORE SALES!

The remarkable three-dimensional superstructure *attracts* customers — the cabinet helps them select their frozen foods *fast;* keeps traffic flowing. The non-fogging THERMOPANE glass doors enable the customer to *see* the particular packages wanted . . . and during peak shopping hours, the doors can be removed quickly and easily for fast-moving self-service. Actually, it's a complete sales and service unit! It creates buying interest, closes the sale and delivers the goods — all *you* do is rake in the profits!

Models immediately available for use in supermarkets, meat, and fish markets, ice cream and other frozen food stores — see your FRIGID-FREEZE representative or write for details *now!*

Illustrated, FRIGID-FREEZE Cabinet No. G-1046 equipped with 99-3 superstructure.

$795

Retail Price, Complete. F.O.B. Factory

SLIDING GLASS DOORS

Easily removable for self-service—maximum sales—quickly replaceable!

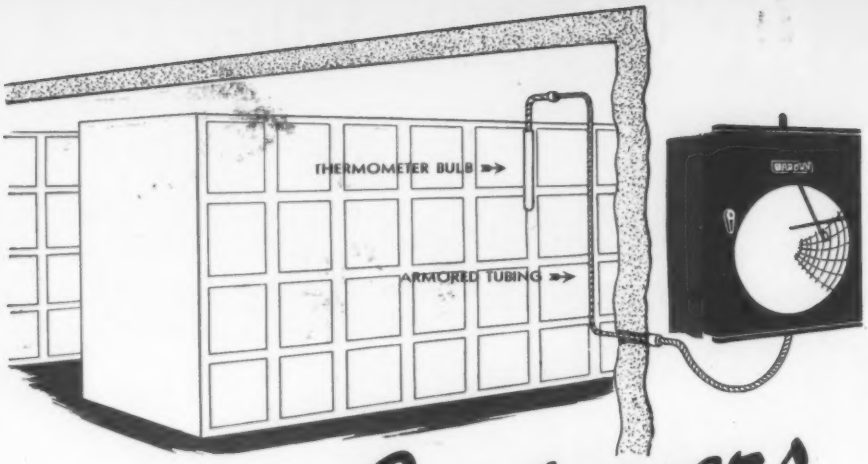
Pioneers IN LOW TEMPERATURE REFRIGERATION

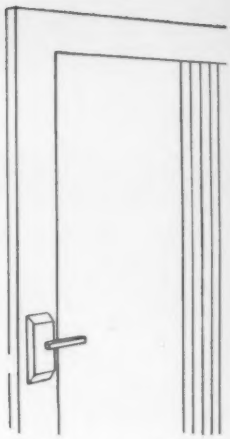
REFRIGERATION CORPORATION of AMERICA

Frigid Freeze

EXECUTIVE SALES OFFICES: 55 WEST 13th STREET, NEW YORK 11, N. Y.
FACTORIES: PERTH AMBOY AND ARLINGTON, N. J.

A PRODUCT OF NOMA ELECTRIC





YOUR *Customers* AND YOUR *Plant* NEED HONEYWELL AUTOMATIC TEMPERATURE RECORDER!

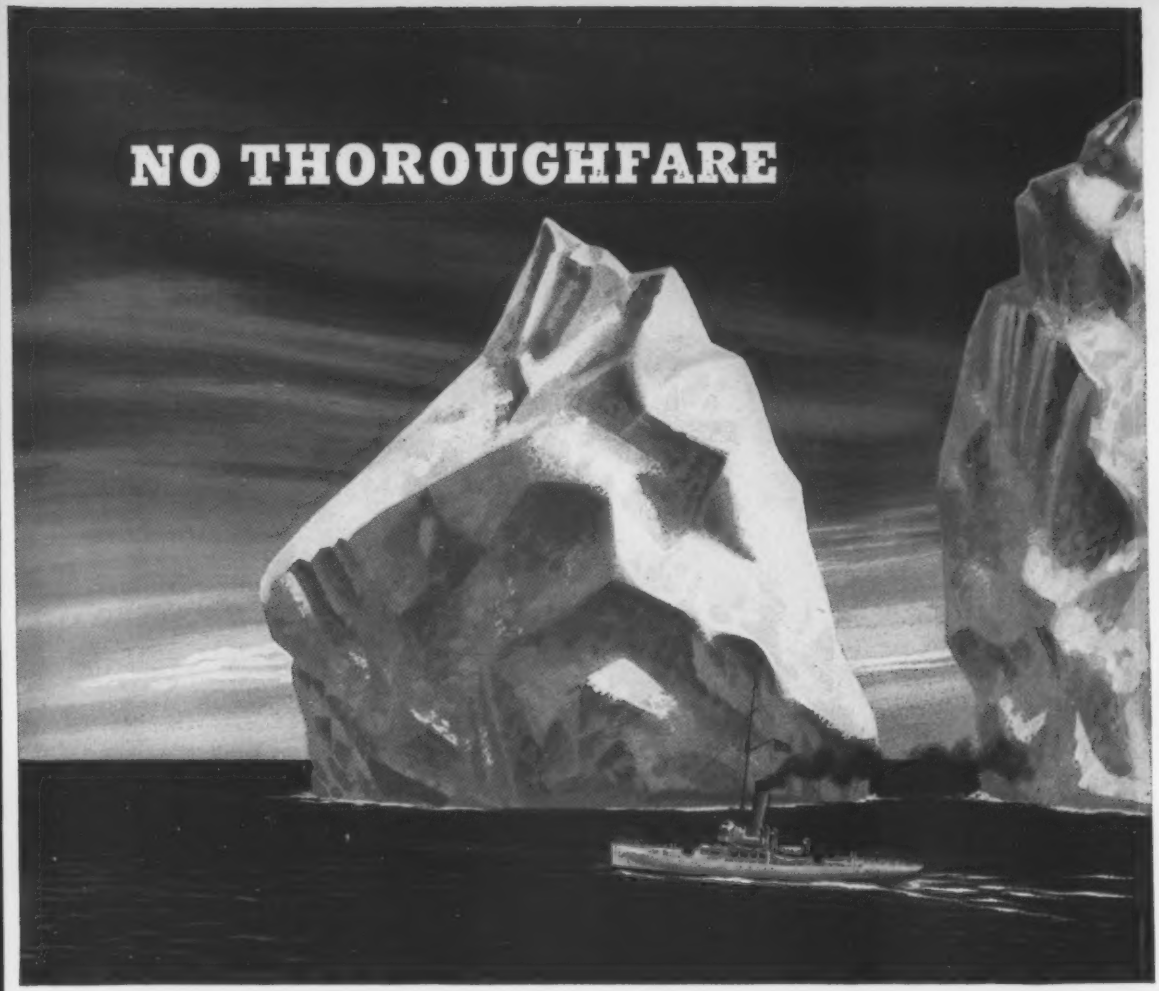
LOCKER PLANT operators need the Honeywell Automatic Temperature Recorder for protection against food spoilage, to safeguard profits, sustain customer satisfaction and promote efficient operation.

Your customers need its service, too, for the assurance that their foods are kept at safe temperatures, which will promote their continuing patronage. The recording instrument is placed at eye-level, outside the freezer room, affording a constant check of your locker plant temperatures.

Each disc-chart records a continuous week's temperature with a range of —30° to +70° F. The discs can be permanently filed for positive proof in the event of claims regarding food spoilage.

Ask your contractor or jobber for complete information about this new Honeywell refrigeration control, or write Minneapolis-Honeywell Regulator Company, 2660 Fourth Avenue South, Minneapolis 8, Minnesota. Branches and distributing offices in all principal cities.

MINNEAPOLIS **Honeywell**
CONTROL SYSTEMS



Every seaman knows that an iceberg must be approached with caution. It's never safe to travel between the towering sides of the "drydock" type, for they are joined beneath the surface of the water.

Traffic *must* flow through the openings of man-made refrigerated spaces, however, and this demands the ease of operation and effective sealing properties of Jamison-built Cold Storage Doors. The specifying of Jamison Doors is routine in the refrigeration, cold storage, and frozen food industries . . . and has been for more than half a century, during which Jamison has paralleled the development and anticipated the needs of these industries.

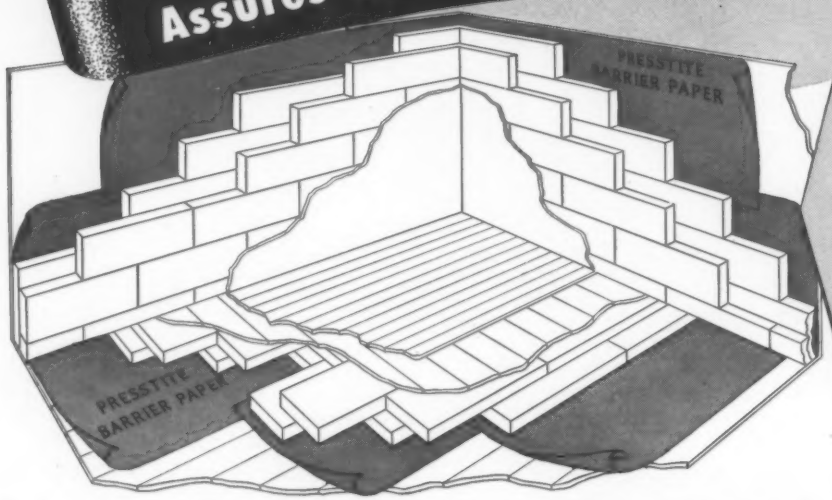
The Jamison standard line . . . Jamison, Stevenson, Victor, and NoEqual Doors, and related products . . . covers all normal needs of the industry. Highly specialized design and rugged, painstaking construction have made the Jamison name world-famous. Jamison-built doors of special design and construction are supplied for exceptional uses. For full information and address of nearest branch, write Jamison Cold Storage Door Company, Hagerstown, Maryland.

Branches in Principal Cities, Coast to Coast

JAMISON
COLD STORAGE DOORS

PRESSTITE Moisture Vapor-Proof BARRIER PAPER

Protects Insulation, Assures More Efficient Refrigeration



Typical masonry and wood construction showing vapor Barrier Paper on floor and walls.

For locker plant and cold storage construction, refrigerator cases or boxes, or wherever loose-fill insulation is used, Presstite Barrier Paper provides a highly efficient barrier to prevent moisture vapor infiltration. If moisture penetrates the insulation material, its protective qualities are destroyed — only when kept thoroughly dry will it continue to function at maximum efficiency. In both frame and masonry construction, a vapor-proof seal is essential.

Presstite Barrier Paper is an excellent grade of tough kraft paper, saturated and coated with the highest grade of gilsonite, asphalt and wax compound. It is black in color, has good flexibility, no odor or taste contamination and *will not shrink* after wetting.

For sealing out moisture or vapor, particularly in refrigerator case construction to protect insulation, Presstite Barrier Paper has withstood the most stringent tests, both laboratory and in actual use.

Moisture Vapor Transfer: Pittsburgh Testing Laboratory tests, following the technique described in Technical Association Pulp and Paper Industry, Paper Trade Journal No. 108, No. 4, January 1939, using 90 mm. Petri dishes, anhydrous calcium chloride as a dessicant, 67% relative humidity at 70° F. shows average transmission of 2.712 grm. water per sq. meter in 24 hours.

Shrinkage: Presstite Barrier Paper shows no shrinkage after cyclic wetting and drying, while U.S.B.S. tests on other papers show shrinkages in 10 cycles ranging up to 4.5%.

Whatever your requirements for a moisture vapor paper seal you'll find Presstite Barrier Paper outstanding in its advantages. Available in rolls of 500 sq. ft., weighing approx. 35 lbs. Send us your requirements and ask for samples today.

Available for Immediate Shipment to Refrigeration Industry

PRESSTITE ENGINEERING CO.

PRESSTITE ENGINEERING COMPANY

[illegible] Chouteau Avenue — St. Louis 10, Missouri

120

Special Ability AT YOUR CO
See your KEROTEST Wholesaler
AMERICA'S FIRST NAME IN QUALITY VA
KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.

GUIDE POST

to dependable quality!

"See Your Kerotest Wholesaler" is more than a slogan . . it is your guide to dependable service on the finest line of air conditioning and refrigeration valves, fittings and equipment in the industry.

Kerotest Wholesalers were selected as distributors of Kerotest Valves and Fittings because they have proven themselves to be capable businessmen who are equipped to give you the best in technical assistance, helpful information on new developments, and to serve as *your* supply source for the *best* of every type of part and equipment. Depend on your Kerotest Wholesaler. He carries your inventory for you . . stands behind its quality . . knows where to locate the hard-to-get items.

See your KEROTEST *Wholesaler*

AMERICA'S FIRST NAME IN QUALITY VALVES

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.

HERE IT IS!

the New SPORLAN *Catch-All* FILTER DEHYDRATOR

THE MOST PERFECT FILTER-DEHYDRATOR EVER DEVELOPED

SPORLAN

COMPLETELY DIFFERENT IN DESIGN!

- The unique construction of the Sporlan Catch-All provides effective moisture and dirt elimination in refrigeration systems.
- The drying agent of the Sporlan Catch-All unlike other drying agents is a *moulded porous cylinder* which *both* dehydrates and filters . . .

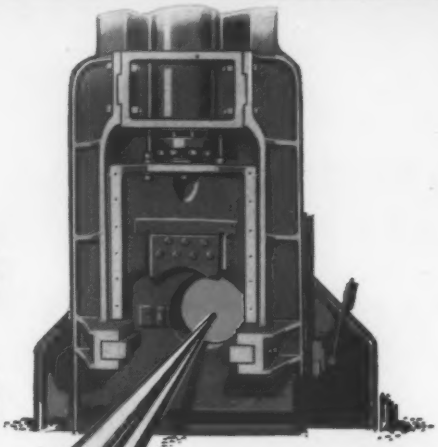
IT CANNOT POWDER! • IT CANNOT PACK!

For
Peak Performance
on all installations
install a Sporlan
Catch-All
and take advantage of these extra features

- The Sporlan Catch-All will reduce the moisture content in an average installation with Freon, Methyl Chloride or Sulfur Dioxide refrigerant to at least 40% below accepted commercial standards!
- The Sporlan Catch-All will catch all scale, solder particles, carbon, sludge, dirt or any other foreign matter *as minute as 9 microns* with negligible pressure drop!

SPORLAN VALVE CO.
3723 COMMONWEALTH AVE. ST. LOUIS 17, MISSOURI

EXTRUSIONS *and* FABRICATIONS *for* AMERICAN INDUSTRY



From the extrusion to the finished product . . . this aluminum bearing is typical of the unlimited number of diversified items produced in our modern plants.

Extruded aluminum and brass alloys . . . and products fabricated from extrusions . . . permit manufacturers to meet high volume production schedules.

EXTRUDED METALS DIVISION
DETROIT GASKET & MANUFACTURING COMPANY
DETROIT 23, MICHIGAN

DOUBLE-TUBE COUNTER-FLOW **CLEANABLE** WATER-COOLED CONDENSERS

HALSTEAD & MITCHELL CONDENSERS

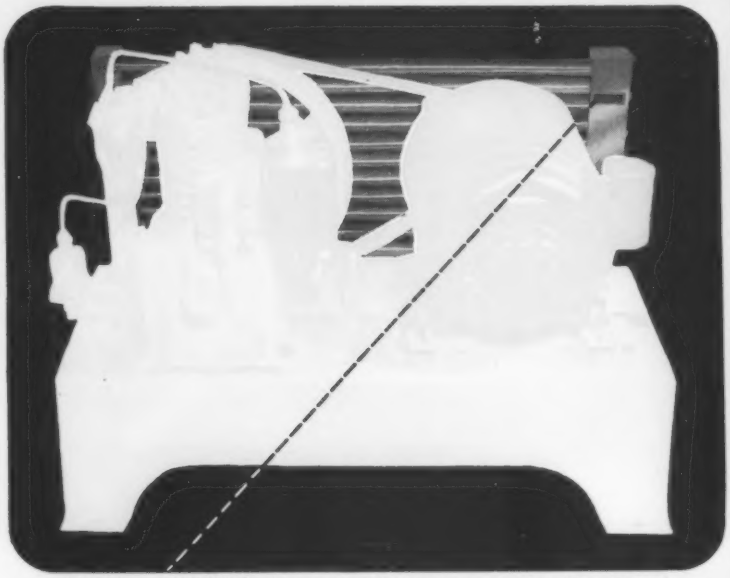


Photo shows 1 H.P HM Condenser at work in a typical commercial refrigeration unit.

Greatly Increase the efficiency of any refrigeration System!

Unit pictured
5 H.P.

Seamless Copper Tubes
Brass Headers Machined and Brazed

As the age of most water-cooled condensers increases and corrosive material builds up within the water tubes, more and more electrical energy is required and less and less refrigeration is received. Your operation costs, in the form of increasing water and electric bills, will rise because your unit must stay in operation longer to provide the amount of refrigeration needed.

Not so in an HM *Cleanable* Condenser where the proper heat-exchange efficiencies are continuously maintained for the life of the Condenser. HALSTEAD & MITCHELL Condensers are constructed to outlive and outwear the motor and the compressor of most refrigeration units.

HM *Cleanable* Condensers can be maintained at "new-unit" efficiency and economy by regular and continued use of a standard cleaning tool. Water tubes are easily accessible at both ends (as shown) for the spiral tool to clean and restore copper water surfaces to their original heat-exchange efficiencies—the result is longer life and operational economy for your refrigeration units.

HM Halstead & Mitchell

Wholesalers in principal cities *Write for descriptive literature.*

OFFICES: Bessemer Building, Pittsburgh 22, Pa.

THOUGHTS FOR MERCHANDISERS

THE LONGEST WALK A CUSTOMER EVER TAKES!

...when he walks off your books, dissatisfied, displeased and distressed. To make him a profitable customer again costs plenty, and the merchandising tragedy is that such costs can be avoided. A thoroughly dependable condensing unit is one of the surest steps you can take to safeguard good will, and protect your reputation for quality. And "BRUNNER" has always meant dependable condensing units. For many manufacturers BRUNNER is a *three way investment* in sales features—an investment in quality prestige, an investment in dependable service, and an investment in year 'round low maintenance cost.

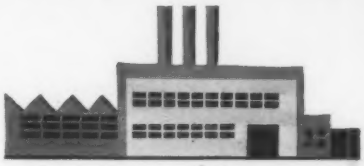
BRUNNER MANUFACTURING CO.
Utica 1, New York, U. S. A.

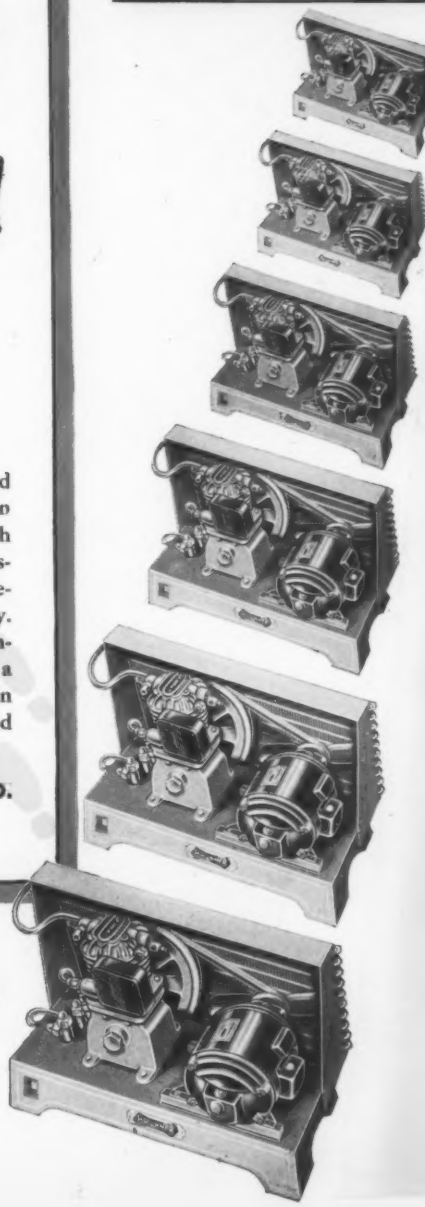
AIR AND WATER COOLED MODELS
¼ HP. TO 25 HP.

BRUNNER
SINCE 1906

BRUNNER
SINCE 1906

REFRIGERATION
helps you serve better



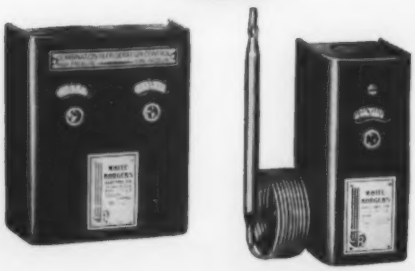


No wonder we installers like WHITE-RODGERS controls

There's no waiting to check settings... just set them and go on to the next job

Easy-to-read, visible dials, accurately calibrated in degrees Fahrenheit or pounds pressure, make installation and adjustment of White-Rodgers automatic refrigeration controls quick and easy.

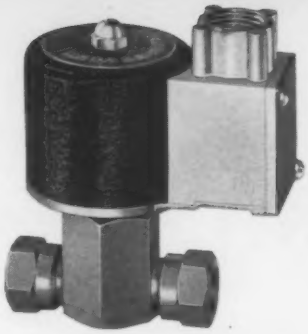
When you're responsible for the operation of equipment, it's well to remember that such equipment can be only so good as the controls that make it work. That's why more and more manufacturers are standardizing on White-Rodgers refrigeration and air-conditioning controls. White-Rodgers Electric Company, St. Louis 6, Missouri.



WHITE-RODGERS
Controls
FOR REFRIGERATION HEATING AND AIR CONDITIONING

2 Tons Freon **SV 21**

Brass body, renewable soft Neoprene seat. Come-apart construction with rotatable coil and aluminum junction box. ⅜" F.P.T. connection.



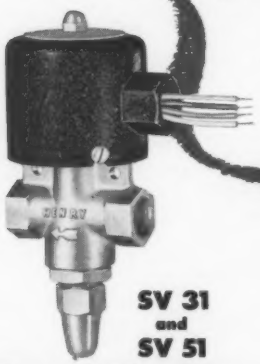
SV 11 **1 Ton Freon**

Brass body, mounted in standard electrical outlet box. Easily installed. ⅜" F.P.T. connections.

INTERNAL PARTS OF HENRY SOLENOID VALVES ARE MADE OF STAINLESS STEEL.

Henry Solenoid Valves

choice of refrigeration engineers who want quiet, efficient valves ...of advanced design!



SV 31 and SV 51

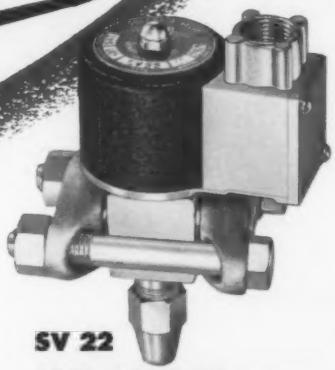
3 Tons and 5 Tons Freon

Brass body, come-apart construction with rotatable coil housing. Two piece impact plunger with direct acting metal-to-metal seat on SV 31. Neoprene seat on SV 51. Manual operating stem. ⅜" and ½" F.P.T. or solder connections.

SV 101 and SV 201

10 Tons and 20 Tons Freon

Brass body with flanged come-apart construction. Pilot-piston operated. Connections ¾" F.P.T. or ⅞" O.D. solder.



SV 22

10 Tons Ammonia

Steel body with come-apart construction and hardened steel renewable seat. Aluminum junction box. Manual operating stem. ⅜" and ½" F.P.T. flanged connections.

SOLD BY LEADING JOBBERS

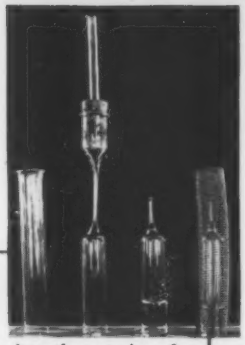
HENRY VALVE COMPANY

HENRY VALVE CO. CONTROLLING FLOW SINCE 1914

Control Devices, Valves, Driers, Strainers and Accessories for Refrigeration and Air Conditioning and Industrial Applications

3260 W. GRAND AVENUE • CHICAGO 51, ILLINOIS Cable: HEVALCO CHICAGO

The ANSUL Method of ANALYSIS FOR WAX in Oil-Refrigerant Mixtures



WARNING!
Do not handle the sealed glass tubes when they are at room temperature except when wearing goggles or preferably a face mask.

PREPARATION OF SAMPLES

1. The desired amount of refrigeration oil is placed in an ordinary glass test tube

2. The upper portion of the test tube is carefully drawn to a capillary without deleterious effects on the refrigeration oil.

3. Connect the tube to a source of refrigerant desired.

4. By means of cooling the exterior of the tube, the refrigerant is drawn into the test tube to a predetermined mark which makes the concentration of oil in refrigerant desired.

5. Using a hand torch, the capillary neck is sealed off.

6. Place wire screen around sealed tube for safety.

OPERATION OF APPARATUS

1. After tubes are placed in the bath, the stirrer (**g**) is operated at a speed which insures uniform temperature in all parts of the bath.

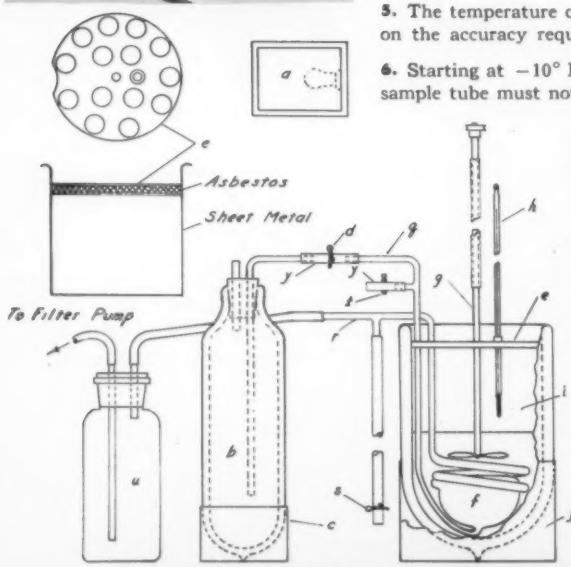
2. Suction is applied at (**r**)

3. Liquid ammonia is introduced into the cooling coil by opening clamp (**d**). Care must be taken not to admit too much ammonia, since to do so may result in violent boiling and an unnecessary waste. Repetition of this operation will result in cooling the bath to the desired temperature In order to stop cooling, the vacuum is broken by opening pinch clamp (**s**)

4. The temperature of the bath can be kept constant within 1° F. at any point between +60° F and −95° F

5. The temperature of the bath is decreased in 2° intervals, more or less, depending on the accuracy required.

6. Starting at −10° F the temperature is kept constant for at least 8 minutes. The sample tube must not be disturbed during this time.



7. In order to detect wax when and if formed, the sample tube is taken out of the bath and examined in front of the light box or other suitable light source. Haziness must not be mistaken for wax separation. Normally the wax forms a floc.

ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.

FOR EXAMPLE: Samples of refrigeration oils, submitted by users of Ansul Refrigerants to Ansul Wholesalers, are tested by Ansul laboratories without charge by the Ansul Wax Determination Method. This method, developed and standardized especially for use in connection with oils used in refrigerating systems, provides an accurate determination of wax separating from oil-refrigerant mixtures at low temperatures.

For more complete information, send for ANSUL NEWS NOTES, Vol 9, No 3

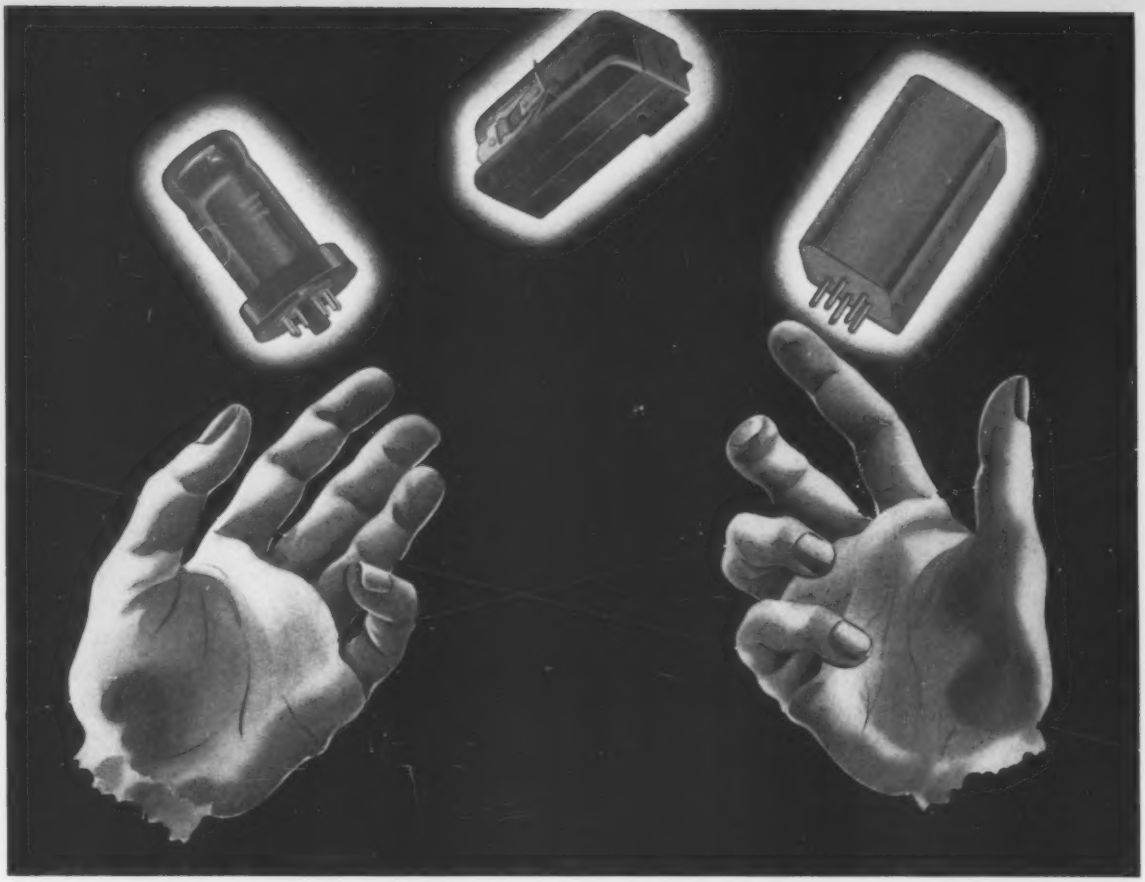
LIQUID Methyl Chloride by ANSUL

LIQUID Sulfur Dioxide by ANSUL

* T M Reg. U.S. Pat. Off.

ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE

ANSUL CHEMICAL COMPANY
REFRIGERATION DIVISION, MARINETTE, WISCONSIN
DISTRIBUTORS FOR KINETIC'S "FREON-11," "FREON-12," "FREON-21," "FREON-22" AND "FREON-113"



BUSH ENGINEERS JUGGLED THESE PARTS TO GIVE YOU

Fully Automatic Defrosting

BUSH

OUR FORTIETH YEAR

Just as Bush put automobile radiators to work in 1907 . . . to create finned-coil evaporators and condensers . . . Bush engineers put together an electron tube, sensitive relays, and a synchronous motor . . . came up with Bush automatic defrosting.

Now, when ice builds up on coils and the fan has to work harder, the extra current required initiates an electronic circuit which completely defrosts the coil in less than ten minutes.

Your Bush factory representative will gladly help you apply fully automatic water defrosting to any commercial refrigeration system. Because he's a good man to know, why not get better acquainted with him before you plan your next job?

Bush heat transfer products are sold by leading refrigeration wholesalers everywhere

HEAT TRANSFER PRODUCTS • BUSH MANUFACTURING COMPANY • HARTFORD, CONN.

415 LEXINGTON AVE., NEW YORK • 549 W. WASHINGTON BOULEVARD, CHICAGO • EXPORT ADDRESS: 13 EAST 40th ST., NEW YORK • CABLE "ARLAB"

Binkley

HOME AND FARM FREEZERS NOW AVAILABLE

DEALER'S PRICE
$252.00
F.O.B. ST. LOUIS, MO.
CRATING $7.00 EXTRA

DON'T LET THE LOW PRICE MISLEAD YOU . . . this is TOP QUALITY merchandise priced to reach the buying public. OPA list price on this unit was $530.00!

- CONSTRUCTION—Insulation is six pound density. It is fireproof, vermin proof fibre—glass packed, four inches deep on the sides and five inches on the bottom. Cabinet walls are sealed—vapor proof!
- SAFE-FREON is the refrigerant in the Binkley Freezer. It is non-explosive, non-corrosive, non-toxic, odorless, fireproof, stainless and tasteless.
- ENGINEERING—All compressors, valves, controls and coils are well known standard makes. They are the finest.
- CONVENIENT—Top opening lid makes all parts of the interior handy to get to. Lid can't freeze shut!
- CAPACITY—The Binkley Freezer is 80 inches long—27½ inches wide and 34 inches high. Its capacity is 15 cubic feet!

COMPARE THESE PRICES

Compare the prices of the new Binkley Freezer with that of the six leading competitors making a unit of comparable size. Binkley sacrifices on price but not on quality!

BOX A	$383.00
" B	378.00
" C	378.00
" D	372.00
" E	345.00
" F	336.00
BINKLEY	252.00

SEND YOUR ORDER NOW – IMMEDIATE DELIVERY

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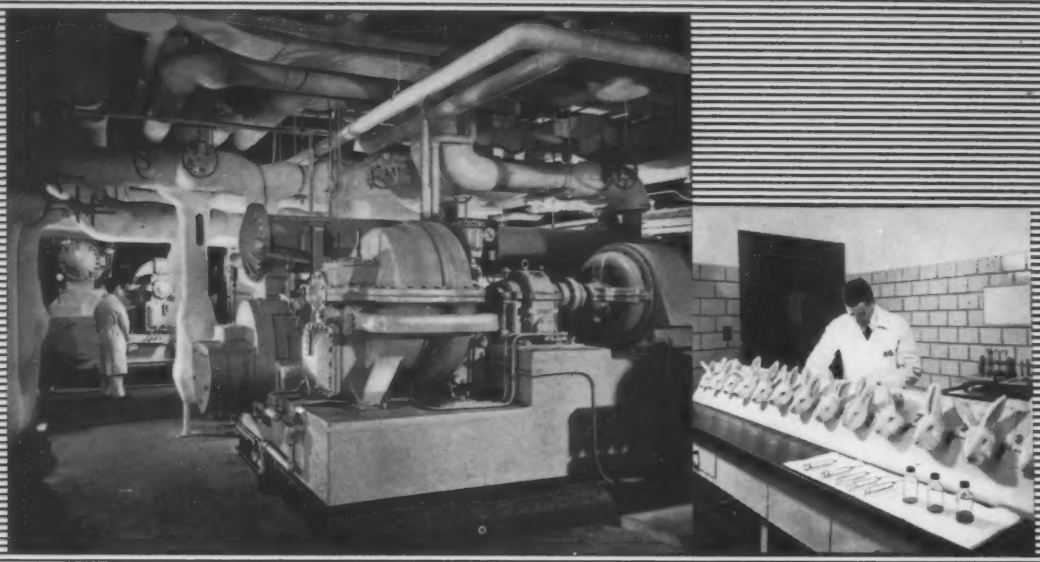
ENGINEERED EQUIPMENT COMPANY

413 MERCHANTS EXCH. BLDG.
ST. LOUIS 2, MISSOURI



pick centrifugals to reduce refrigeration costs

A Carrier Centrifugal is doing an exacting twofold refrigeration job for Bristol Laboratories, Inc., Syracuse, New York, manufacturers of penicillin. And doing it at low cost. The centrifugal supplies the refrigeration needed for processing penicillin. And it also provides the chilled water in the air conditioning that cools and dehumidifies the air for biological laboratories and other parts of the plant.

Eli Lilly; Parke, Davis; E. R. Squibb and other pharmaceutical houses choose Carrier Centrifugals. They count on them for dependable, economical refrigeration, for Carrier developed the centrifugal refrigerating machine 25 years ago and has constantly improved it. For example, Carrier was first to introduce "Lo-Fin" tubing to increase efficiency and reduce size . . . an economizer to reduce horsepower . . . and the *exclusive* dollar-saving Carrier shaft seal that keeps the loss of costly refrigerant to a minimum.

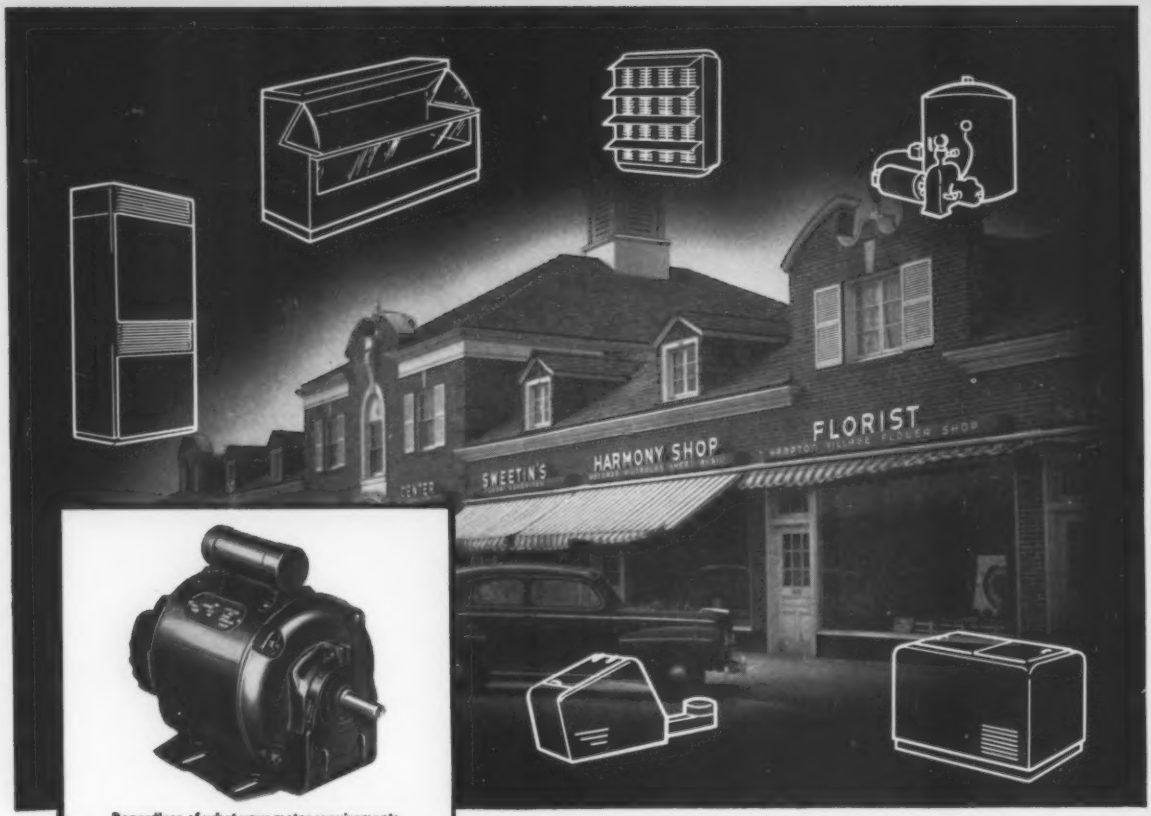
Carrier Centrifugals offer the *extra* values of Carrier leadership and the skills gained on air conditioning and refrigerating installations all over the world. They're your assurance of refrigeration that's always right. Carrier Corporation, Syracuse, New York.

Carrier

air conditioning

refrigeration

industrial heating



Regardless of what your motor requirements may be—small motors . . . large motors . . . Wagner makes them all. The motor illustrated is typical of the Wagner line of single-phase and polyphase motors.

"Your MOST OBEDIENT SERVANT"

. . . the Wagner Fractional Horsepower Motor

Small in size . . . low in price . . . but it does a thousand different jobs in the stores, the shops, homes, schools and farms of America. Wagner fractional horsepower motors furnish the power to operate quick freeze units, compressors, stokers, pumps, and many other motor-driven appliances.

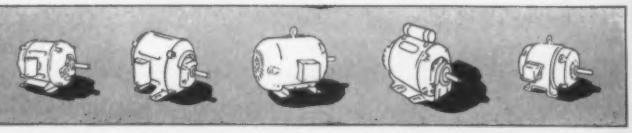
The unfailing dependability of Wagner Fractional Horsepower Motors has made them the first choice of many manufacturers of small machines and appliances. Millions of these motors have been built in the huge Wagner plant, and while they still play "hard to get" they are coming from Wagner's motor assembly lines in ever-increasing quantities to help meet the pent-up demand for these outstanding small motors.

Whether your motor requirement is large or small, Wagner can furnish a motor correctly designed to give you greater continuity of operation. The complete line of Wagner motors covers a wide range of types and sizes for every application. More than half a century of motor building experience assures the reliability of every motor bearing the Wagner name. Users of Wagner motors also profit by our quick, convenient, nationwide service facilities.

Twenty-nine branch offices, located in principal cities, are ready to assist you, without obligation, whenever you have a motor problem. Write for Bulletin MU-185 for information on the complete line of Wagner Quality Motors. Address Wagner Electric Corporation, 6442 Plymouth Avenue, St. Louis 14, Mo.

Consult Wagner Engineers on all Electric Motor Problems

Wagner Electric Corporation
EST. 1891

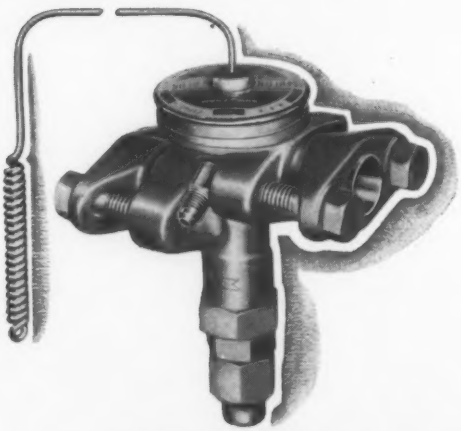


M47-20

• ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE PRODUCTS •

"Detroit" THERMOSTATIC EXPANSION VALVES help keep the nation Cool

No. 673 Thermostatic Expansion Valve
For many years the standard of the refrigeration industry. Orifice sizes 3/64" to 7/32" with capacities up to 3½ tons Freon-12 and 6 tons Methyl.



No. 787 Expansion Valve
Representative of the "Detroit" large capacity line. No. 788 is rated 12 to 20 tons; No. 787—6 to 11 tons; No. 786—3 to 6 tons, Freon-12. Have external equalizer connection and can be furnished with No. 790 distributor with either 6, 12 or 18 openings (¼" each) for multiple distribution.

"Detroit" Thermostatic Expansion Valves are favored by refrigeration men everywhere for air conditioning as well as other refrigeration installations.

"Detroit" Valves are available in the desired capacities. They have the dependability and durability to give long service without attention.

Gas-charging gives "Detroit" Valves close regulation—guards against motor overload—assures completely refrigerated coils at all times. Often, gas-charging makes possible use of a smaller motor since it does not have to work against excessive pressure during the pulldown period. Gas-charged valves balance the system more quickly when starting up, insuring fast, positive action.

2642

DETROIT LUBRICATOR COMPANY

"DETROIT"

General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN
Division of American Radiator & Standard Sanitary Corporation
Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

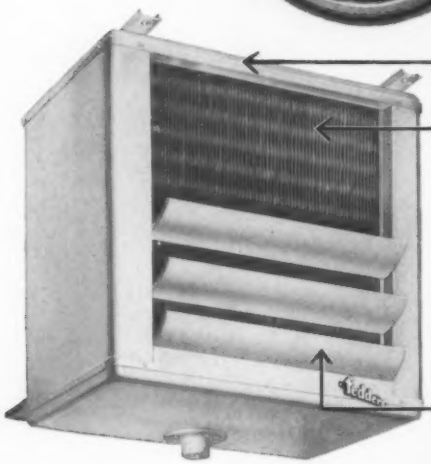
"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

ONLY FEDDERS UNIT COOLERS

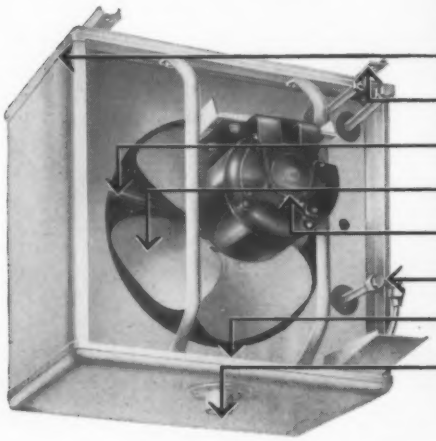
give you

FEDDERS *certified* RATINGS

PLUS ALL THESE DESIGN FEATURES



- PERMANENTLY RUSTPROOF CABINET
- NON-CORRODING ELECTRO—TIN PLATED ALL-COPPER CORE WITH LARGER THAN AVERAGE FACE AREA
- WIDE FIN SPACING ELIMINATES CLOGGING BY FROST
- TUBES EXPANDED INTO FINS BY 5000 LBS. HYDRAULIC PRESSURE
- THOROUGHLY DEHYDRATED CORE INTERIOR
- DIRECTIONAL AIR CONTROL



- FULL DEPTH CASING ENCLOSING FAN
- CONVENIENT HANGERS
- BUILT-IN HEAT EXCHANGER
  Except on Models C3A110, C3B155, C3C242
- BROAD BLADE—QUIET FAN
- RESILIENT MOTOR MOUNTING FOR QUIET OPERATION
- MEETS ALL UNDERWRITERS REQUIREMENTS
- INSULATED PAN PREVENTS DRIPPAGE
- LARGE DRAIN CONNECTION

● Men who know refrigeration know that quality, design, materials and construction mean quality performance. Fedders performance has built the Fedders reputation. It pays to specify Fedders Suspended and Panel Type Unit Coolers. Write for catalog.

FEDDERS QUIGAN CORPORATION
BUFFALO 7, N. Y.

IN AIR CONDITIONING OR REFRIGERATION

CURTIS

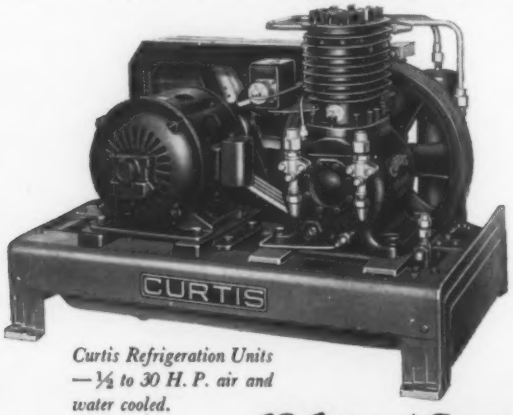
PRECISION ENGINEERING

Assures Highest Efficiency, Economy, Long Life

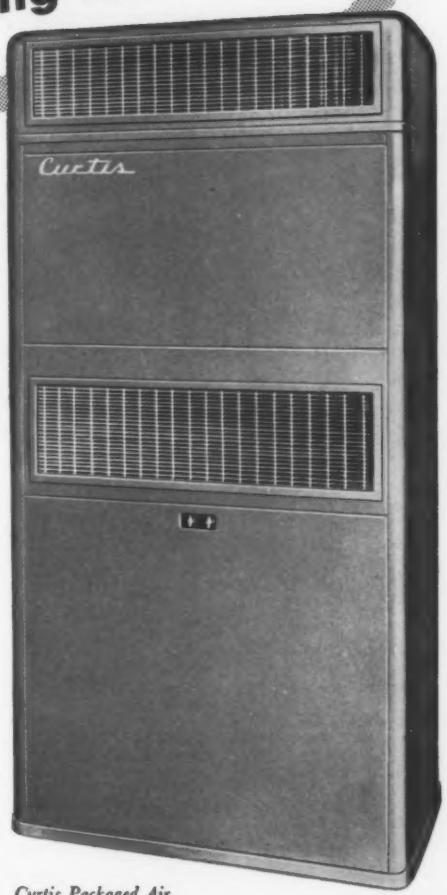
Curtis Packaged Air Conditioners offer these advantages:

- Compact, attractive units — 3, 5, 7½ and 15 tons
- One day installation
- Cool, dehumidify, circulate and filter air
- Easily adapted for heating
- Quiet, dependable operation
- Exceptionally long, trouble-free life

Write to Curtis for full information on Curtis equipment for almost any air conditioning or refrigeration need.



Curtis Refrigeration Units — ½ to 30 H. P. air and water cooled.



Curtis Packaged Air Conditioners — 3, 5, 7½, 10, 15 tons.

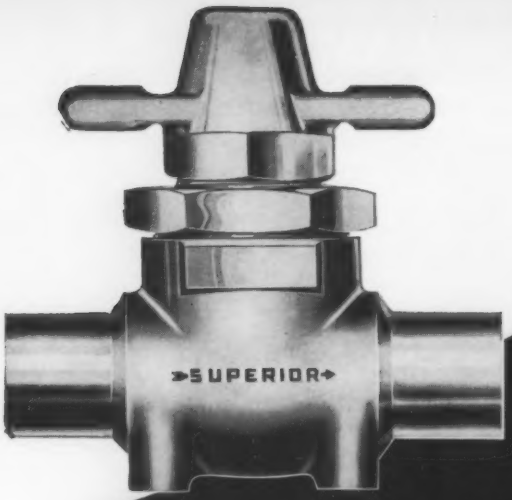
495

93 Years of Successful Manufacturing

CURTIS REFRIGERATING MACHINE DIVISION

of CURTIS MANUFACTURING COMPANY

1915 Kienlen Avenue St. Louis 20, Missouri



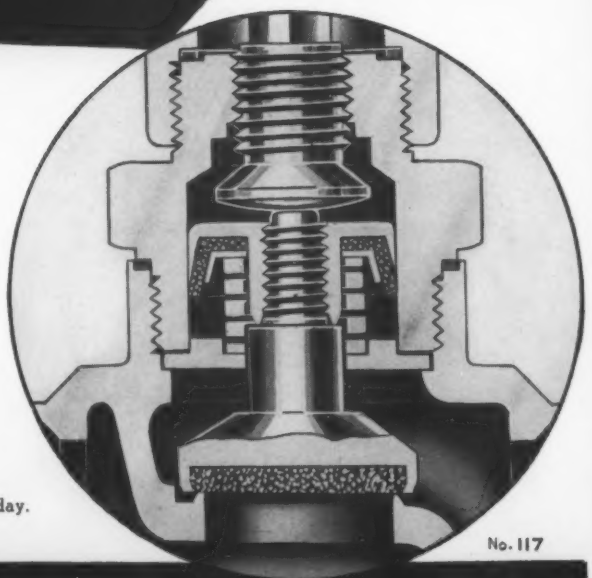
Superior PRESSURE CUP VALVES THE *Inside* STORY

The skirt of the pressure responsive cup—acting like the piston in an automobile tire pump—automatically forms a positive pressure seal, with the valve stem in *any* position. Eliminates packing "drag" and leaks prevalent with conventional packed valves.

. . . and that's not the *only* feature of these SUPERIOR Pressure Cup Valves!

- Seal-cap gasket assures pressure-tight joint.
- Pressure responsive cup forms positive seal.
- Metal-to-metal backseat when valve is fully opened.
- Wrench flats for easy removal of internal assembly.
- Spring assures positive opening under pressure.
- Generous openings assure against pressure drop.
- *Available in sizes through 2⅛" sweat nd and 2" F.P.T.*

If you haven't a copy of Catalog R2, request one today.



No. 117

SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA

OFFICES IN PRINCIPAL CITIES • STOCKS: CHICAGO (6) • LOS ANGELES (15) • JOBBERS EVERYWHERE

The new Gilmer #355 V-Belt Assortment

Contains 50 V-Belts of selected sizes covering hundreds of applications

From factory sales records and distributors' experience have been selected the 50 V-Belts that fit the largest number of refrigerator applications. These belts make up the Gilmer #355 Assortment which forms the foundation of a complete V-Belt department . . . in minimum space . . . with minimum investment.

With the assortment are supplied valuable merchandising aids, including the 8-hook Metal Wall Rack for mounting on wall of service department or inside panel of service truck.

Other items in the assortment are listed in the coupon below.

And remember . . . every time you sell a Gilmer V-Belt, you are supplying your customer with the finest V-Belt money can buy.

Order the New Gilmer #355 Assortment from your Gilmer Distributor today. He carries a complete stock of replacement belts. Or mail coupon to us direct. Total cost $39.90. Belts sell for $66.50. Your net profit is $26.60.

L. H. GILMER COMPANY, Tacony, Philadelphia 35, Pa.
DIVISION OF UNITED STATES RUBBER COMPANY

Gilmer BELTS

MAIL COUPON TODAY

L. H. GILMER COMPANY, Tacony, Philadelphia 35, Pa.

Please send me the complete Gilmer #355 Assortment of Refrigerator V-Belts as follows:

1. 50 Assorted V-Belts
2. 8-hook Metal Wall Rack
3. Gilmer Handimeter (patented) for quick measuring of belts
4. Gilmer V-Belt Catalog, "America's Belt Bible"
5. Inventory Card
6. Window Display Card

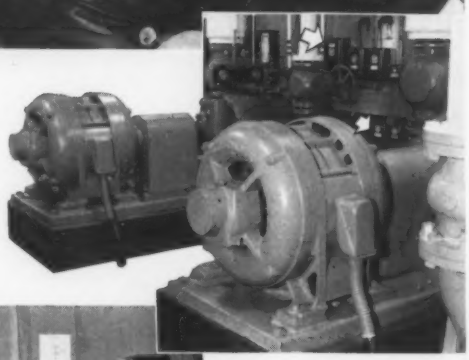
Bill me $39.90 through your nearest jobber

NAME_____

ADDRESS_____

TESTING PILOTS
at "18,000 ft" and 50 below
in the Cornell Aeronautical Laboratory Altitude Chamber

Above—Engineers in winter flying equipment recording test data in Cornell Aeronautical Laboratory Altitude Chamber.



Right—View of the equipment room. Note Allen-Bradley motor starters in the background.

Allen-Bradley Control used throughout

Pilot reactions at high altitudes are easily determined in this modern altitude chamber at the Cornell Aeronautical Laboratory. In this chamber, the low air pressures and low temperatures encountered at high altitudes can be perfectly simulated by pulling a vacuum and by circulating refrigerated air. Motors performing these functions are operated by Allen-Bradley controls.

Allen-Bradley motor starters are so popular in refrigeration and air-conditioning installations because they are so dependable and do not require regular servicing attention. They have only one moving part—there are no pins, pivots, hinges, or bearings to cause trouble, and no flexible conductors to break. Their double break, silver alloy contacts never need maintenance, for any oxides that may form on the contacts are good electrical conductors. Then, too, their extremely simple design automatically eliminates trouble.

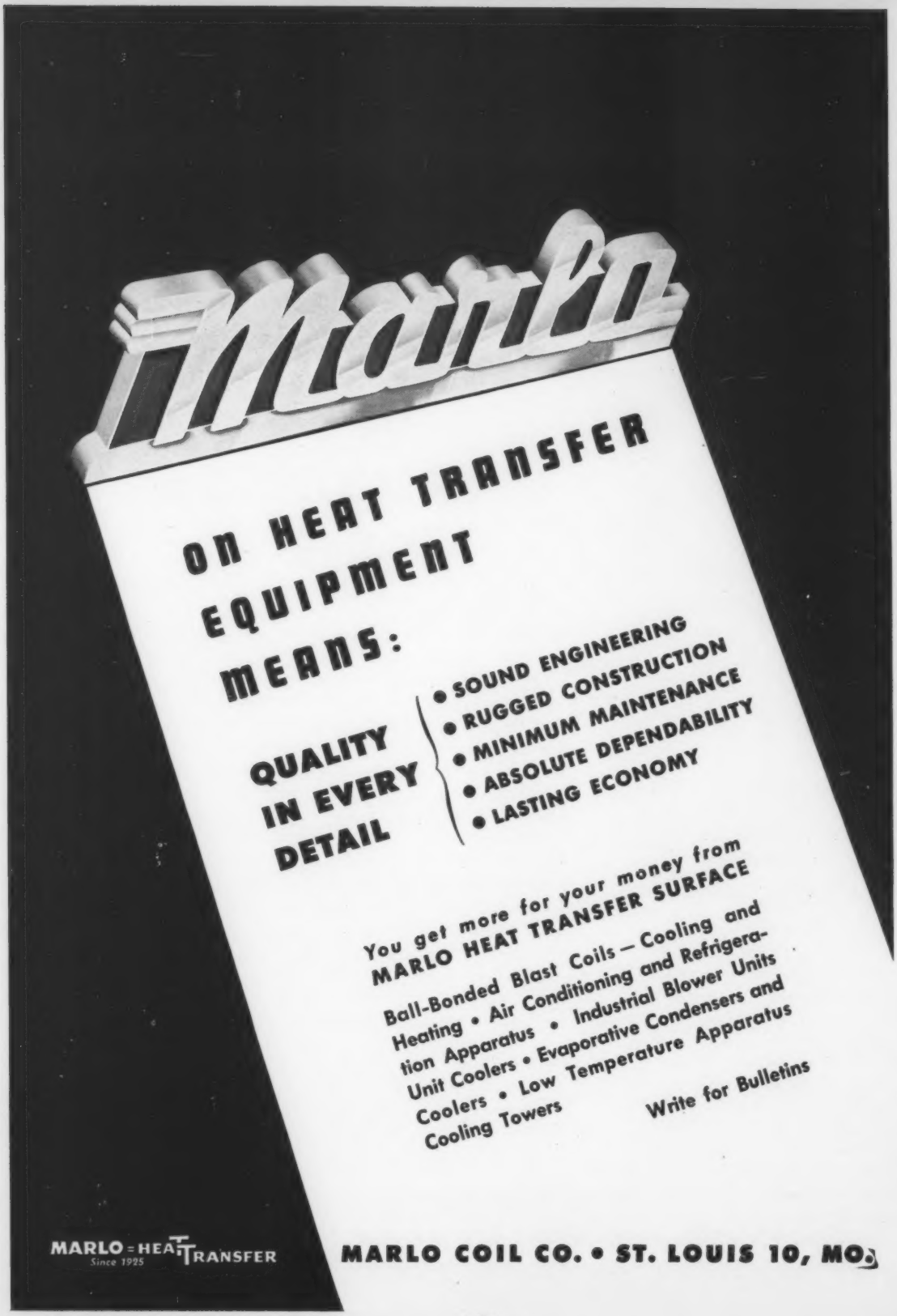
Write, Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wisconsin.

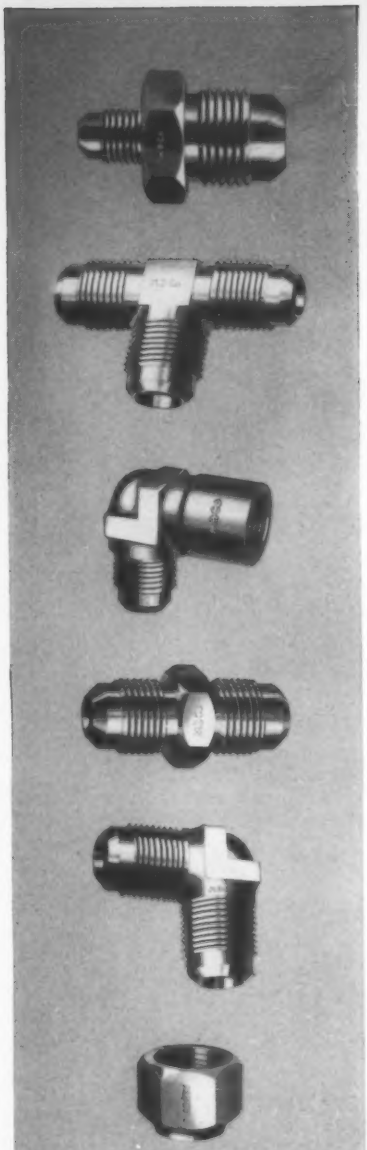
Above—Control panel in the altitude chamber showing Allen-Bradley motor starters and relays.

Right—Bulletin 709 size 2 across-the-line solenoid starter with cover removed. The white interior reflects light in dark locations for easy installation.

A-B Quality

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL
QUALITY


Marlo
ON HEAT TRANSFER EQUIPMENT MEANS:
QUALITY IN EVERY DETAIL
• SOUND ENGINEERING
• RUGGED CONSTRUCTION
• MINIMUM MAINTENANCE
• ABSOLUTE DEPENDABILITY
• LASTING ECONOMY
You get more for your money from MARLO HEAT TRANSFER SURFACE
Ball-Bonded Blast Coils — Cooling and Heating • Air Conditioning and Refrigeration Apparatus • Industrial Blower Units Unit Coolers • Evaporative Condensers and Coolers • Low Temperature Apparatus Cooling Towers
Write for Bulletins
MARLO = HEAT TRANSFER
Since 1925
MARLO COIL CO. • ST. LOUIS 10, MO.



Mueller Brass Co. refrigeration fittings are manufactured either from forgings or from extruded brass rod. They conform in every respect to S. A. E. Standards with the exception of the bore. These openings are machined to permit a full flow equal to the inside diameters of the tubing used, and consequently are larger in internal area than S. A. E. fittings.

MUELLER
BRASS CO.
PORT HURON,
MICH.

ORDER FROM YOUR WHOLESALER

MADE IN U.S.A.

YOUR REFRIGERATION WHOLESALER IS YOUR BUSINESS FRIEND

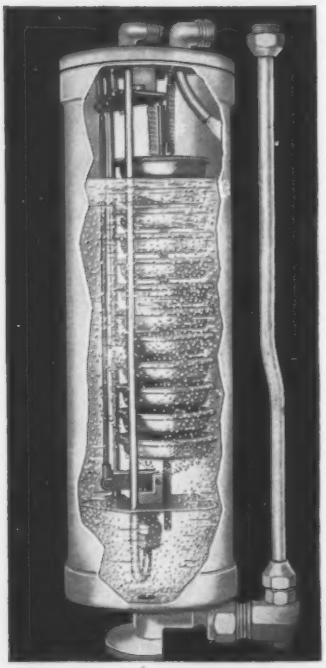
● The wholesaler has a distinct and important service to perform in the distribution of goods. We believe that through the services he renders, the goods actually reach the ultimate buyer at a lower cost rather than a higher one, and that selling goods direct does not reduce the cost to the eventual consumer. As manufacturers we know that if we sold direct, we would require billing, accounting and shipping forces ten to twenty times greater than what we have at present. Our transportation charges would increase tremendously, our storage space would have to be greatly enlarged. These things and many more would necessarily reflect themselves in the cost of the product.

Our policy for many years has been to distribute our goods on a selective wholesaler plan. Our experience has shown us that this policy is a sound one. It achieves for us a nation-wide distribution at the lowest possible cost. This lower cost naturally benefits not only us but also the wholesaler, service man and contractor.

Our distribution policy will be continued on the same basis as it has been for many years—the selective wholesaler plan. We will sell only sufficient wholesalers in a locality to assure complete coverage of territory and trade. All trade inquiries will be referred to the wholesaler.

MUELLER BRASS CO.
PORT HURON, MICHIGAN

It's EASIER TO SELL THE NEW HUDSON CONSTANT PRESSURE CARBONATOR THAN TO SELL AGAINST IT!



Another Quality Product from the House of Hudson

Maybe you're the world's best salesman. We don't know. But if you're a smart salesman you'll sell what's easiest to sell and you won't try to sell a horse and buggy to a man who wants a new automobile. Nor, will you try to write orders for complicated, expensive, old fashioned carbonating machines when the customers have read, seen or heard of the Hudson Constant Pressure Carbonator. The Hudson is a Brand New Idea — simple, efficient, dependable. NO motor; NO pump; NO pulleys, belts or gears. NO servicing expense. It's compact, easily installed, guaranteed for 10 years.

No other carbonating equipment can offer so many valuable and desirable features.

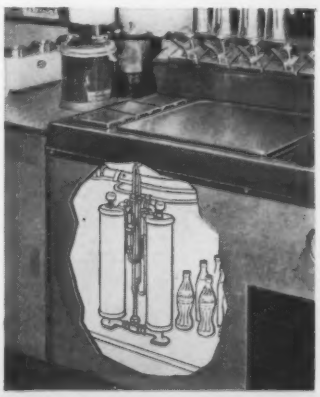
Remember, month by month it will be easier to sell a Hudson — than any other similar equipment. If you want to get way out ahead of competition and make real money — start selling Hudson Constant Pressure Carbonators NOW! Write for details.

HOW IT WORKS

The twin cylinders of the Hudson Constant Pressure Carbonator alternate in operation to deliver 25 gallons or more per hour flow of sparkling, carbonated water at constant pressure up to 125 pounds at the draft arm, regardless of city water pressure.

INSTALLATION

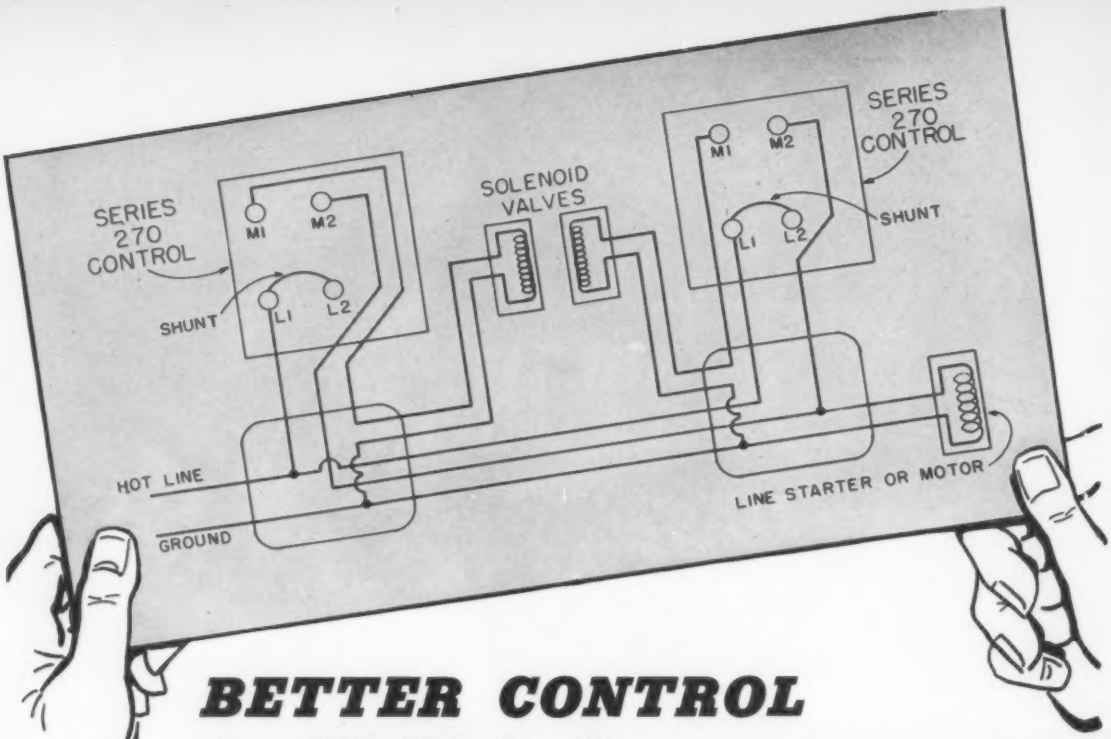
The Hudson Constant Pressure Carbonator is small and compact (3¾" x 16¾" x 9¾"), weighs only 17 pounds and may be installed in any sweet water bath or other cooling system. Expense of service and replacement of parts are eliminated with the Hudson Constant Pressure Carbonator.



HUDSON PRODUCTS CO. Inc.

4400 ST. AUBIN AVE. Dept. R
DETROIT 7, MICH.

EXPORT DIVISION • 2111 Woodward Avenue, Detroit 1, Michigan, Cable: FORACO



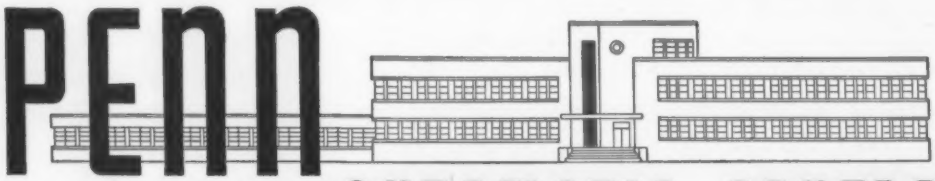
BETTER CONTROL for Multiple Systems

That's right! The PENN 270 Series Control assures a better and more economical way to control a multiple system. Shown above is a typical hook-up of a multiple system, using the controls for pilot service. Either one of the controls can energize a separate liquid line solenoid valve and start the compressor simultaneously. This is just one way to take advantage of the greater versatility of the PENN 270.

In addition, you can also use the PENN 270 to control polyphase motors of 3 h.p. and under without line starters (where protection is provided against single phasing). You can control two separate load circuits. And when wired in single phase circuits as a 2-pole switch, the 270 always breaks the "hot" line.

You'll like this superior control—*the first and only control to have a load-carrying, 2-pole switch.* You'll like it for its versatility, simplicity, efficiency and dependability. Write for full details on the PENN 270 Series today. *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th St., New York 16, U. S. A. In Canada: Penn Controls, Ltd., Toronto, Ontario.

Series 270 and 272 PENN "Single" temperature or low side pressure controls. Also (not shown) Series 271 and 273 PENN "Dual" Controls which combine in one unit a temperature or low side pressure actuated mechanism and built-in high pressure safety cut-out.



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

BTU's

News • Laws • Trends

● **Restaurants Are Hungry.** It's a fact. And refrigeration equipment is one of the products they're hungry for. Replacements for war-worn equipment continue to be hard to get, members of the National Restaurant Association reported at their recent annual meeting. From indications shown at the meeting, interest in frozen foods and frozen dough products is high among food serving establishments, but a shortage of refrigeration equipment is keeping them from utilizing these products as widely as they'd wish.

So it looks like there'll be plenty of good selling days ahead in the restaurant field for this industry of ours.

● **Home Freezer Insurance.** A new insurance policy offering three years' protection against food spoilage to home freezer users was recently announced to distributors of Whiting home freezers by Howard Roberts, sales manager. The new policy, which is available at the purchaser's option, protects against spoilage due to any mechanical failure of the Whiting freezer. Mr. Roberts claims that the policy has a considerably lower premium than any other similar contract ever offered to home freezer owners.

● **First for Kelvinator.** Kelvinator became the first regular television advertiser in the home appliance field with a series of weekly television broadcasts which started May 7 over a four-city NBC network. For those of you with television sets, the program is on from 8:30 to 8:45 p.m. Wednesdays and the network includes WNBT, New York City, WPTZ in Philadelphia, WTTG in Washington D. C. and WRGB in Schenectady. The program is called "In the Kelvinator Kitchen" and features Alma Kitchell.

● **They're Different Today.** How does the modern household electric refrigerator compare with those of yesteryear? Here's the way one manufacturer's representative sizes it up: in 1927, the most popular unit was the 5 cu. ft. model, which had a refrigerating unit weighing 22 lbs. By 1937, best seller was the 6 cu. ft. unit, with a 143 lb. refrigerating unit. Today the 8 cu. ft. model leads, and its refrigerating unit weighs 77 lbs. The 1927 refrigerator could freeze 4 lbs. of ice in six hours on a hot day; today's model can freeze 16 lbs. in the same period.

● **California Locker Plant Bill.** A bill which would establish comprehensive regulation of frozen food locker plants has been introduced in the California legislature. Among other things, the bill would set a minimum license fee of $15 for plants and a maximum of $25. The act would prohibit the sale of meats at retail by the plant, or the operation of a retail market of any kind in connection with a plant. Semi-annual inspections by state department of agriculture men are provided for; specified temperatures for various rooms are included in the act, and the various rooms would have to be equipped with recording thermometers.

● **Wyoming Tax Bill Killed.** The Wyoming legislature has killed a bill which would have required Wyoming industrial firms to pay the state's 2% use tax on commercial refrigeration and air conditioning equipment purchased outside the state. The measure, introduced by Representatives Frank Mockler and Earl Chamberlain, would have eliminated certain exemptions on machinery and equipment now allowed under the state use tax law, which exempts equipment which is not carried by Wyoming dealers.

● **New Commercial Sales Code.** The National Commercial Refrigerator Sales Association, Inc. has adopted a 12-point code of ethics to govern the conduct of distributors and dealers who are members of that group.

"Kick-backs" or side payments on trade-in sales are prohibited by the code; pirating of salesmen will be considered as "highly unethical"; misrepresentation in advertising is banned; and false or disparaging statements about a competitor also are prohibited by the code, which is part of the association's by-laws and articles of incorporation.

A recently-prepared booklet outlines NCRSA's policies and program and is being distributed to members and prospective members. The group represents a really constructive influence in commercial refrigeration merchandising. If you'd like to know more about the association, you can get additional information from the secretary, A. J. Edmundson, First Colony Distributors, Inc., 127 S. Salisbury St., Raleigh, N. C.

● **Big Stores and Frozen Foods.** Three more department store members of Frozen Food Foundation have initiated over-counter and home-delivery frozen food operations, bringing to about 20 the number of Foundation members with major frozen food departments. Herpolshimer's, Grand Rapids, Mich.; Donaldson's, Minneapolis; and the Golden Rule, St. Paul, are the most recent stores to go all-out on frozen foods merchandising.

● **Frozen Food Facts.** Some interesting possibilities in frozen foods merchandizing are indicated by the recently completed 1947 Analysis of the Greater Milwaukee market, conducted by the Milwaukee Journal. In the first place, the survey shows that the use of frozen foods has more than doubled since 1943. This year, 46.7% of the families in the area are using frozen foods, as compared to 44.8% in 1946, 28.3% in 1945 and 21.5% in 1943.

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ONE LINE OF AIR CONDITIONERS
FOR EVERY APPLICATION

Cash in on the Amcoil Sensaire and the Amcoil Latenaire Conditioners—the *complete* line of air-conditioners. Fast Moving—Nationally Advertised—Remote and Self-contained Types—Immediate Deliveries—PROFITS FOR YOU! Act Now!

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The answer to human comfort in warm humid climates—thrives on humidity! Patented revolutionary operating principle literally wrings moisture out of the air! Provides cool, healthfully conditioned air without that clammy ice-box feeling. Adjusts automatically to varying temperature and humidity conditions. Fully equipped, remote and self-contained models. Attractive streamlined cabinets make a handsome addition to any room.

Latenaire Conditioner self-contained Model SCL-250. Pat. No. 2,405,812.

AMCOIL SENSAIRE CONDITIONER

The answer to human comfort in warm dry climates. Specifically designed for comfortable air-conditioning wherever sensible heat loads predominate. Efficient, quiet operation; in both remote and self-contained types. Fully equipped. Beautifully streamlined cabinets, finished in attractive two-tone brown, crackle baked enamel.

Amcoil Extended Surface Fin Increases Capacities. Pat. No. 2,402,262.

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AIR CONDITIONING · REFRIGERATION
AMERICAN COILS CO., NEWARK, N. J.

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MAKE THE BOYS KEEP THE BOOKS

Every service man keeps his own records in this dealer's shop—and the rise in profits proves that this practice pays

This simplified work order form is filled out in triplicate by each mechanic. Hours of labor are itemized on the back of the top slip.

DOCTORING up an ailing service department by breaking down shop operations into simplified routines and compelling every service man to keep his own records has resulted in a brighter profit picture for Sincomb Bros., Los Angeles dealer in commercial refrigeration and household appliances.

Incorporated in January, 1947, the 11-year-old Sincomb firm now is set up to do a $350,000 annual business, and expects to derive a full 50% of this total from its maintenance activities after this year.

But it was not always this way. Only last year, in fact, Francis Sincomb, owner of the company, became so concerned over the malfunctioning of the store's service department that he set Warren Burgis, general manager, to making a thorough analysis of the company's maintenance operations.

To Each Its Own

As a result of the findings of this survey, five separate and distinct repair shops now are maintained—one each for refrigerators, radios, washing machines, and small traffic appliances, plus an "outside service" department which handles repair of equipment in customers' homes. All five of these service shops are housed in a new $20,000 50 x 75-foot building at the rear of the sales store. Mr. Sincomb admits that "we may not need all of this space for as much as two years to come, but we expect the emphasis in our business to gradually swing from the sales room to the service shop and so we're installing ample facilities now."

Since the reorganization of the service department, each of the five shops has been operating as an entirely separate entity. Each is equipped with separate personnel, individual stockroom, a budgeted amount of space, separate advertising campaigns, and other facilities.

The refrigerator shop, for example, has two full-time mechanics and a $3000 inventory of replacement parts. The radio repair shop has an inventory of $3500 and one full-time man. Two mechanics operate the washing machine department with a $1500 parts inventory. The small appliance shop, supervised by one mechanic, has a $2000 parts stock.

Initial operating experience under this reorganized setup soon revealed that profits of the refrigerator repair shop were consistently lower than from any of the other maintenance departments, despite the fact that the work was being handled by experienced service men and that the prices were right.

This disparity between profit returns from each of the five shops led to another analysis in which the firm broke down each repair operation into weeks, months, and quarters. This analysis showed that while all other departments were operating at maximum efficiency many elements were combining to chip away the profits from refrigeration service.

Most important of these, it was discovered, was the deteriorated condition in which many old refrigerators were received, necessitating free call-backs for additional adjustments or repairs after the original overhauling. A marked varience between the number of man-hours actually used in repair work and the number of hours of labor charged out on customers' invoices also was found.

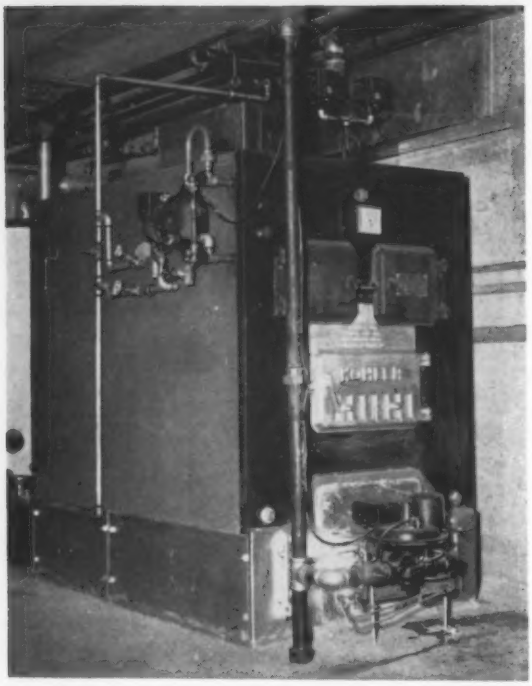
Realizing that the call-backs were necessary and that probably no way could be found of obviating them,

Continued on page 103

a cooling contractor shows how to

TURN ON THE HEAT

Heating is just as much a part of air conditioning as is cooling, and the ability to handle a complete year-around installation is a boon to any contractor's business. Here's one way it can be done



This gas-fired steam boiler in the basement of the store is the "heart" of the system's heating plant. A single supply line and a single return line connect the boiler to the packaged conditioners on the main floor.

INSTALLATION of the heating equipment which comprises an integral part of year-around air conditioning systems can—and should—constitute a lucrative bit of "bonus" business for the alert and enterprising cooling contractor.

In addition to providing this plus business, this extra margin of profit on a year-around installation, the handling of heating equipment by cooling contractors is a logical expansion of activities—certainly as much so as the invasion of the cooling field by heating contractors.

And in the opinion of W. K. Jamison of Jamison Engineering Co., Airtemp outlet in Dayton, Ohio, there's nothing about the heating end of the year-around conditioning business that should cause a capable cooling contractor any trouble.

A case in point is the year-around air conditioning installation made by the Jamison organization in a new unit of the Gallaher Drug Co., local drug store chain.

Occupying a section of a brand new business block in an expanding residential area on Dayton's west side, this new Gallaher store is modern and up-to-the-minute in design and appearance—and it wanted its equipment to be the same way. That's why it was decided to install all-weather conditioning.

The Jamison company handled the problem by installing three 5-hp Airtemp self-contained air conditioning units with steam coils located right above the direct expansion coils. Steam for these coils is provided by a Kohler Type DA60 gas fired boiler equipped with Republic radiant fired gas burners.

For cooling, the Airtemp units operate in the orthodox way. All circulated air, whether heated or cooled, is distributed through ducts to air outlets located at strategic points throughout the store.

Here's the pitch on the heating end of this job.

The Kohler boiler, with its burners, was installed in the store's basement, as nearly as possible beneath the three unit conditioners which were located in one corner of the stockroom at the extreme rear of the main floor area. Primary reason for locating the conditioning units on the ground floor rather than in the basement was to facilitate the disposal of condensate. Only connections needed between the boiler and the units was one main steam supply line and one return line.

A Minneapolis-Honeywell modulating steam valve was located in the main supply line, and is controlled by a modulating thermostat in the front of the store.

The heating coil in each of the unit conditioners is the standard two-row coil which is supplied as optional equipment with these units. It is tapped for a 1½-inch ips supply line and a 1-inch ips return line. It has a capacity of 510 edr with 2-lb steam pressure and 70 F entering air.

Air distribution is accomplished through insulated ductwork leading from each of the three units to the various outlets located throughout

the store. The ducts are attached directly to the tops of the units, from which the plenum chambers and discharge grille units have been removed.

The duct from one unit leads to one of the three No. 35 Aneomostats through which air is distributed to the main portion of the store, with branch ducts leading to two smaller Anemostats in the pharmaceutical department and the office located at the rear of the store.

Air from the other two units is directed into a common duct leading to the other two No. 35 Anemostats in the ceiling of the store's main sales floor, to a smaller Aneomostat in the "donut shoppe" at the front of the store, and to two No. 64 Tuttle & Bailey double-directional registers, one of which is located in the ceiling alongside each of the store's two front doors. All distribution ducts are insulated and located in the furred space between the ceiling and the roof.

Seven Tuttle & Bailey No. 980 return registers are strategically spaced around the store at floor level, including one by each front door. A 24 x 12-inch return grille is located at the rear of the store about 1 foot below ceiling level. A smaller Tuttle & Bailey return register is located in the store's office space.

Air Distribution Planned

The carefully planned location of supply and return grilles by the doors in the store's all glass store front makes possible maximum utilization of the sun's heat on this glass front (which has a southern exposure), thereby keeping heating bills at a minimum. It also serves to keep this glass front free of steam and frost in cold weather.

An outside air inlet with a 17 x 12-inch free area is located at the rear of the store to offset infiltration of air both in winter and in summer, and to furnish ventilation.

Dehumidification in summer is an important element in air conditioning installations in this geographical location, so the system's control setup is arranged in such a way that if the thermostat is satisfied the humidistat will continue to operate one of the unit conditioners until humidity is reduced to the desired percentage.

To lessen the load for both cooling and heating, the roof of the store was insulated with 3 inches of Johns-Manville insulating board.

MORE ABOUT HOT AIR

DO YOU want to know more about this business of adapting packaged air conditioners to heating as well as cooling purposes? Because we feel sure that you do, we are scheduling in an early issue an article giving another slant on how to go about it. This story will tell how a Cincinnati contractor sold an extra unit conditioner by showing the prospect how it could be tied in to his existing warm air heating plant. Ideas like this can help you, too, sell more air conditioning!

—The Editors

These three unit conditioners each contain a heating coil as well as a cooling coil for year-round operation. Ductwork leading from the tops of these units connects them to the many air distribution outlets throughout the store. G. A. Fowble, assistant manager of the store, gives the units the once-over.

Shown in the ceiling's center panel are two of the six Anemostats which handle the bulk of the air distribution throughout the store. Tuttle & Bailey double-directional grilles and return registers also are employed.

Show officials and prominent guests line up for the ribbon-cutting ceremony on opening night. Left to right are: Gerald S. Robinson, president, California Refrigerator Co., San Francisco parts wholesaler; Paul B. Reed, chairman, internationl educational board, RSES; Neal S. Templin, executive secretary, Refrigeration Contractors Association, Los Angeles; H. T. McDermott, national secretary, RSES; Eddie Glazier; W. W. Allison, national president, RSES; Bob Knolls; E. M. Flannery, president, REMA; Mr. Moore; J. Pat Riley, exposition chairman; Eddie Nelson; and radio announcer.

3500 See WESTERN REFRIGERATION Show

ORGANIZED a year ago, the California Association of the Refrigeration Service Engineers Society held its first annual Western Refrigeration Industry Exposition in conjunction with its first annual convention April 25-27 at Long Beach, Calif.

While the three-day convention was in session at the Hilton Hotel, the exposition clocked through its display room in the Municipal Auditorium a total of more than 3500 individuals identified with the industry, in addition to hundreds of consumers who were permitted to view the exhibits at certain hours.

Organized with no precedent by which to judge interest, and with a minimum of show experience at their command, the show management originally set a goal of as few as 20 exhibits. More than double this number of exhibitors participated.

Reaction of both exhibitors and those attending the exposition, as indicated to a REFRIGERATION INDUSTRY representative, was summed up by one exhibitor who said: "We must do this every year on the Coast."

Those registering to see the exposition, and associated with the industry, came from such distant points as Alaska, Birmingham, Ala., Columbus, O., Detroit, Mich., Madison, Wis., Atlanta, Ga., Worcester, Mass., Auburn, N. Y., Walla Walla, Wash., and Canada. One refrigeration service man from Melbourne, Australia, was present, as well as a Chinese student now in this country studying refrigeration engineering.

Concensus among representative leaders in the industry was that while an eastern show is indispensable, and they do not wish to detract from its paramount position, a show for the far west is equally imperative because of the great distance the eastern shows are from the western states.

"Usually," explained one refrigeration man, "only two or three top flight men from a factory can afford to go all the way east. With a western show, a greater number of secondary executives can participate."

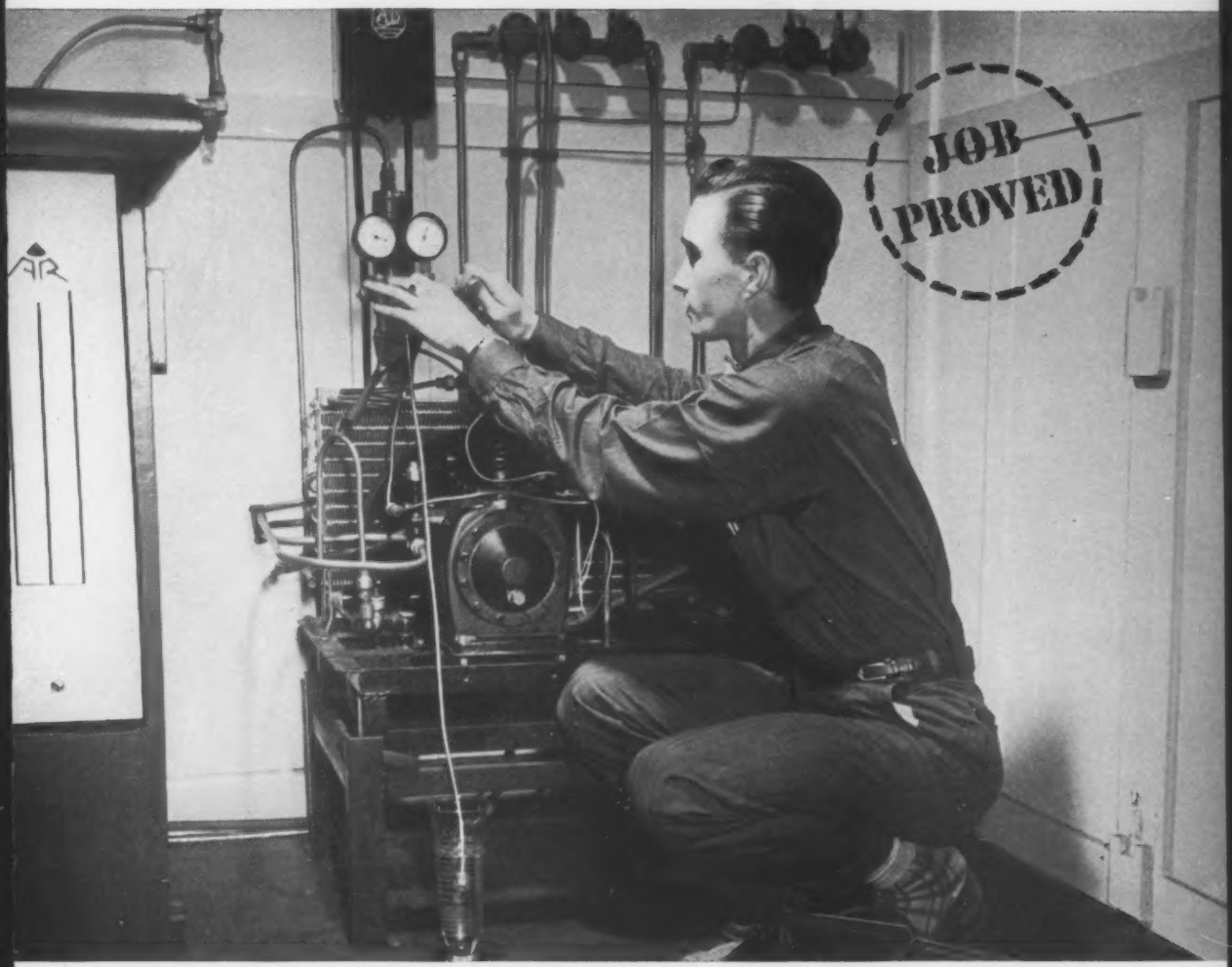
"This is a fine show and is splendid considering that it is the first one," said B. J. Huntley, Wilkins Distributing Co.

"This show is doing a big thing for our industry," said D. George Brauer, president of Perfecold, Inc.,

Continued on page 96

Three of the more than 40 product exhibits which attracted visitors to the three-day show.

Tops for Stopping Wax Troubles



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Shown by Extensive Tests to Have Lower Wax Separation Points

Hundreds of leading servicemen give their customers the highest possible assurance of freedom from wax or wax troubles by standardizing on Suniso, the refrigerating industry's leading lubricating oils.

Comparative Floc Tests, made by an impartial purchaser on more than 75 different refrigerating oils, show that Suniso Oils have wax separation points far below those of all similar grades.

Suniso Refrigeration Oils are highly stable and assure long, trouble-free service. They resist chemical combination with "Freon" or other modern refrigerants. No wonder that Suniso "Job Proved" Oils are used by servicemen and equipment manufacturers more than any other brand.

Call your local Suniso distributor for full information on Suniso's six "Job Proved" grades. For free copies of new folder and bulletin "Lubrication of Refrigeration and Air-Conditioning Equipment," write Dept. R16 . . .

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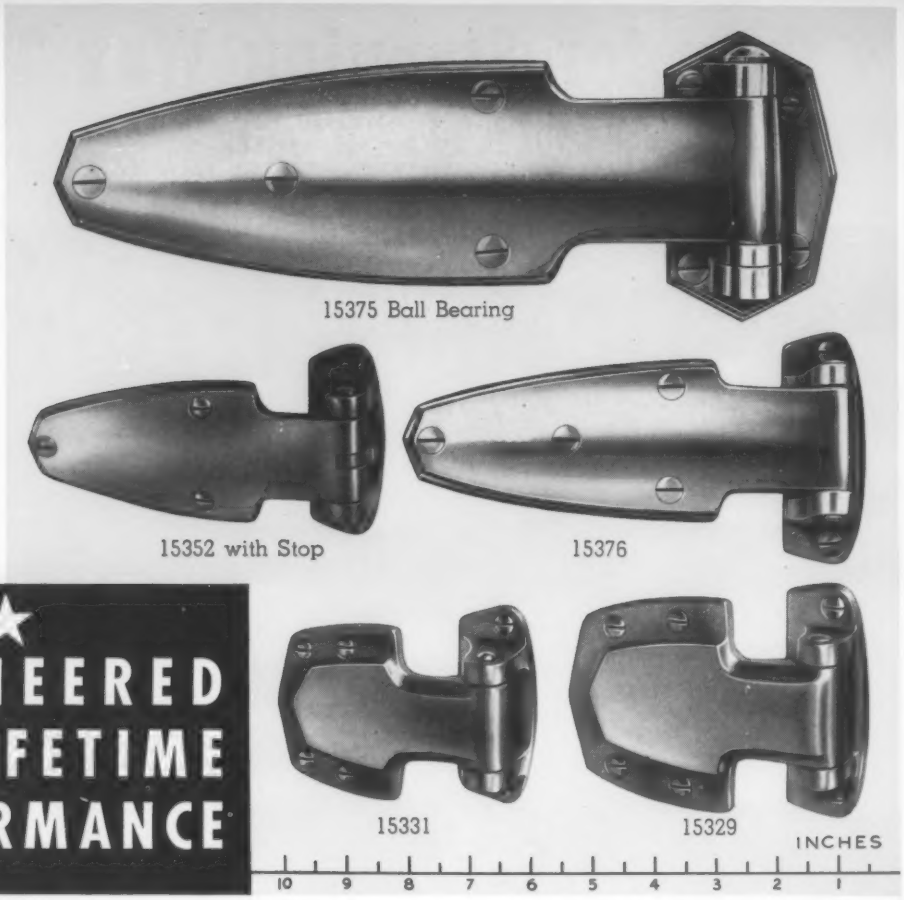

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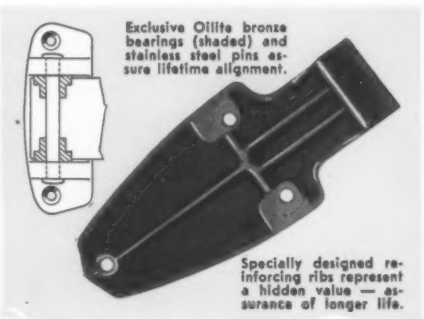
They're handsome . . . they're rugged, too . . . these hinges by Grand Rapids Brass. Each is designed and engineered for year after year of slam-bang commercial service. Note how special attention is given all points of major stress and abrasion . . how modern design and metallurgical science are combined to protect the good name of **your** product on which these hinges are installed. Write for full information on sizes, stops, and offsets.


Exclusive Oilite bronze bearings (shaded) and stainless steel pins assure lifetime alignment.
Specially designed reinforcing ribs represent a hidden value — assurance of longer life.

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Grand Rapids Brass Company

Makers of Dependable Refrigerator Hardware for over 40 Years

Grand Rapids 1, Michigan

COLD PLATES IN LOCKER PLANTS

There are dozens of ways to do a job right, but a million ways to do it wrong. This article tells how careful attention to detail can reduce this percentage considerably when you're installing plate type evaporators in locker plants

By Albert F. Sawyer
Dole Refrigerating Co.

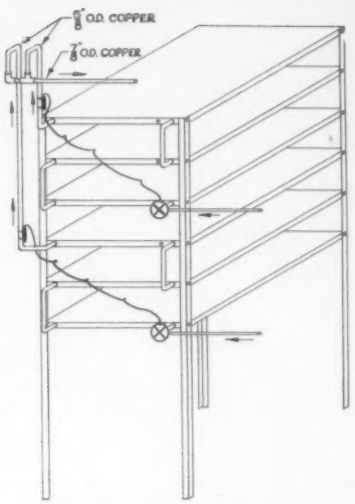
BEFORE the advent of the modern locker plant some ten years ago, plate type evaporators were used mainly in ice cream cabinets, soda fountains, and ice cream trucks. The early locker plants developed a market for overhead evaporators to cool the room as well as shelf type evaporators for freezing packaged products.

Total refrigeration requirements were rather small on these installations, perhaps 2 to 5 hp, and dealers handling small commercial units fitted nicely into the picture from this angle. However, the low side equipment called for special consideration.

Fin coils were not satisfactory, as defrosting was not practical at temperatures of 0 to —10F. Some installations used 1¼-inch pipe coils as the firms furnishing ammonia equipment had done for years. It was found that although defrosting could be accomplished by scraping, it was a lengthy operation and difficult to do a clean job. In addition, many condensing units had insufficient receiver capacity and a large additional receiver became necessary. Perhaps 200 pounds of Freon would be needed to charge a system, representing not only quite an item on first cost, but in case of a leak in the system a sizeable bill for someone to pay.

Plates with relatively small tubing within, used as evaporators, required a small refrigerant charge and accordingly installation engineers took to them as a natural for this work.

In most of the earlier plants, plates were defrosted by scraping with a steel blade on a long wooden handle.



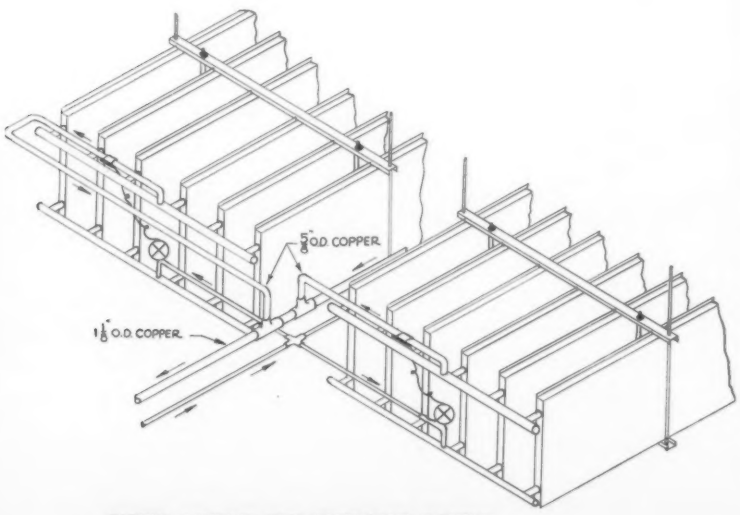
PIPING LAYOUT FOR PLATE STANDS

A light hoe with the tang straightened out makes a serviceable tool. A steel brush as used on a butcher's block may be attached to a handle and used with good effect. A double blade scraper is now on the market, scraping both sides of the plate at once. Blades are set at plate thickness on a handle having a U shaped portion to straddle the plate.

Business-like locker operators make a point of defrosting monthly in hot weather and every two months in winter. It is then a relatively easy job, but if plates are allowed to frost up more than one inch thick, defrosting is not only tedious but the power bill will be up considerably.

Many plants are now being installed with hot gas defrost. One method is to take the hot gas from the compressor head outlet, making connection into the low side just behind the expansion valve. This is usually all right when there are three or more banks of plates and provision is made for a good sized heat exchanger or accumulator, so the slugs of liquid coming back through the bank being defrosted cannot cause damage to the compressor. It is seen that this hook-up will raise back pressure considerably and may overload the motor. Ten minutes should suffice to release frost on

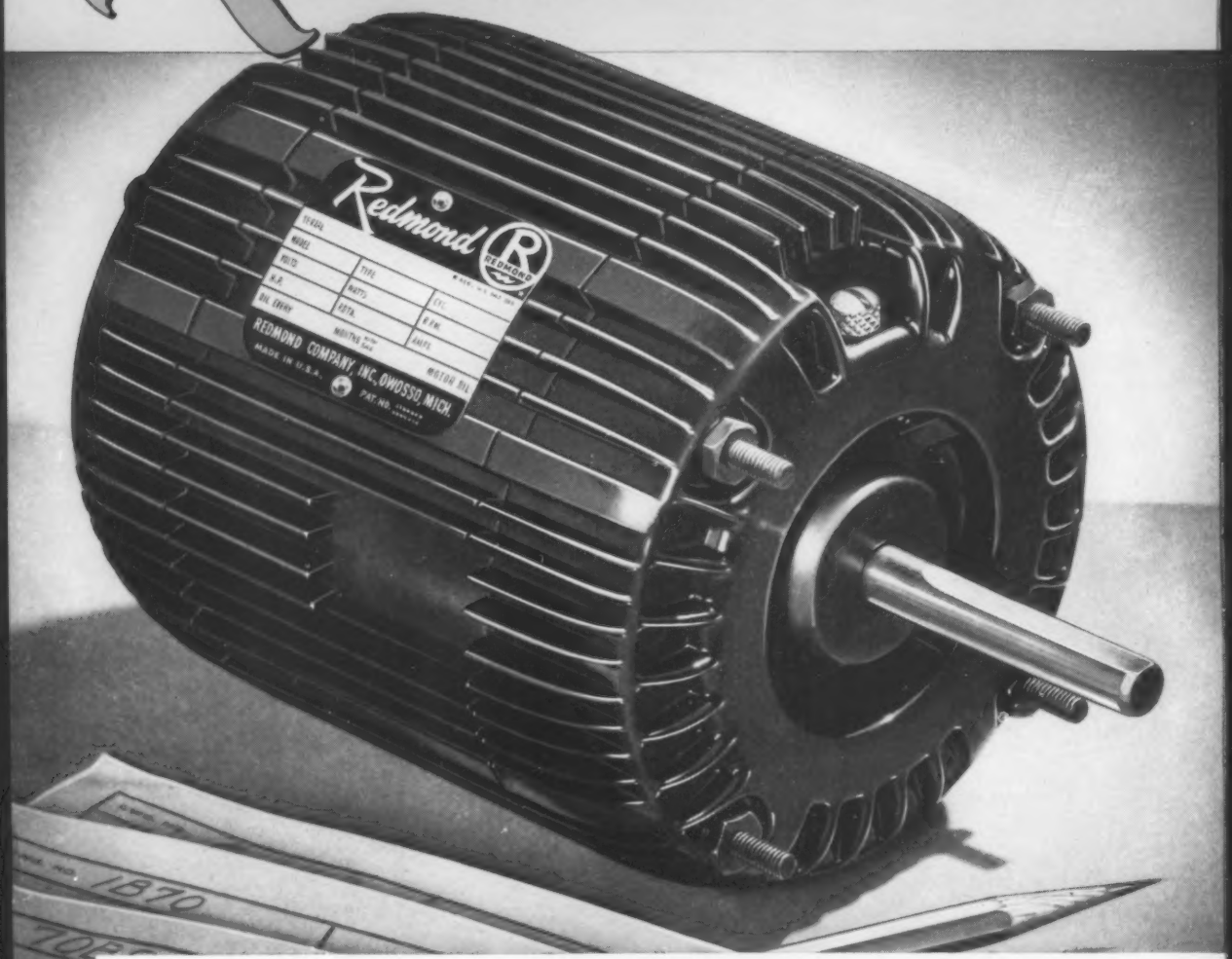
Continued on page 81

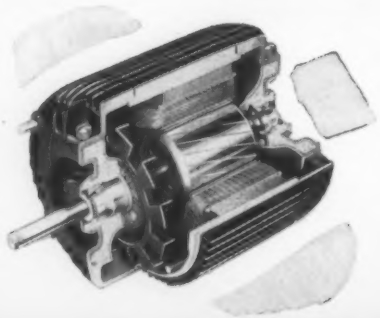


PIPING LAYOUT FOR OVERHEAD BANKS

NEW 1/20th HORSEPOWER

Redmond





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- ★ Bearings spaced 5 inches overall
- ★ Individually fitted bearings
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- ★ Internal air circulation

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TYPE "U"

For A.C. Operation

STRIKE UP an acquaintance with the neatest number that's come along in many a year.

Especially if you're hankering for twentieth horsepower jobs, you'll want every last detail on the new Redmond Type "U" long-life Micromotor.

The basic design for this new Type "U" was determined by thoroughly checking requirements of the motor-consuming markets. As a result, the Type "U" embodies these desirable key features:

Shaded pole design, for speed control and utmost reliability.

Generous broadly spaced bearings, for maximum smoothness.

Super-Life lubrication, to permit continuous operation for unlimited periods, with Micromotor mounted in any position.

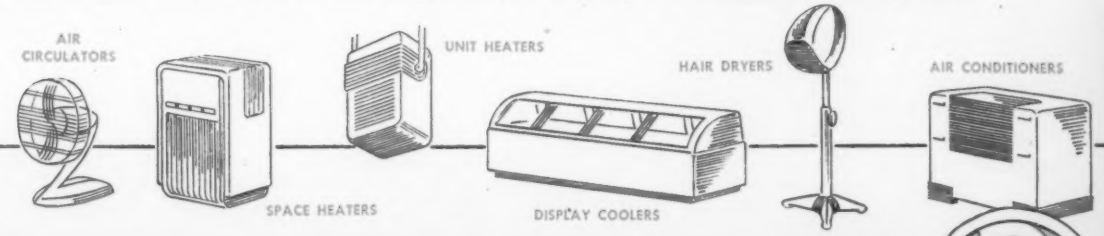
Sturdy die cast construction, in modern functional styling.

The Redmond engineers went the whole way. You'll find the Type "U" loaded with remarkable engineering accomplishments.

It's the culmination of years of designing, testing and mass production experience. It's built by the same specialists who have already turned out more than 20,000,000 dependable Redmond Micromotors. It's the kind of motor you'll want.

Phone or drop us a line today. Ask about the Redmond Type "U" Micromotor.

Illustrated below are just a few of the many applications for which Type "U" Micromotors are ideally suited:



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Composite view of Redmond plants

LET GEMCO HELP KEEP YOUR BUSINESS OUT OF SUMMER
SLUMPS
Tests prove that air conditioning in stores increases traffic, holds customers longer . . . causes them to buy more. In offices, stores, shops, and plants it improves employee efficiency and increases pro-
GEMCO
FRESH COOL WATER
The Ally of Health and Efficiency
Employees make fewer mistakes, think more clearly, and lose less time because of illness when cooled, clear water is easily available.
And, employees appreciate the thoughtfulness of the management
IF ITS
Cool Comfort!
YOU WANT
IN YOUR HOME
or
YOUR OFFICE
Install a Philco
SINGLE ROOM AIR CONDITIONER
Hot, humid summer weather need no longer sap your energy during working hours . . . nor cause you to toss restlessly at night.
— — — Now you can make the installation you thought about . . . planned for . . . wished for . . . during torrid days and nights through the last few years. Now you can have a Philco Air Conditioner in your office . . . and in your home.

Weather For Rent

In a rental room cooler business, you may not have to sell the product—but you do have to sell service. Here's how one successful dealer handles that job

NOW that things are beginning to look better in regard to being able to get deliveries on room and store coolers, maybe you've been asking yourself: what's there in it for a company like mine if I should decide to go into the business of renting "packaged weather?"

Well, the answer is that there are mighty good possibilities in it if you're in a position to set up an operation that will do the job properly.

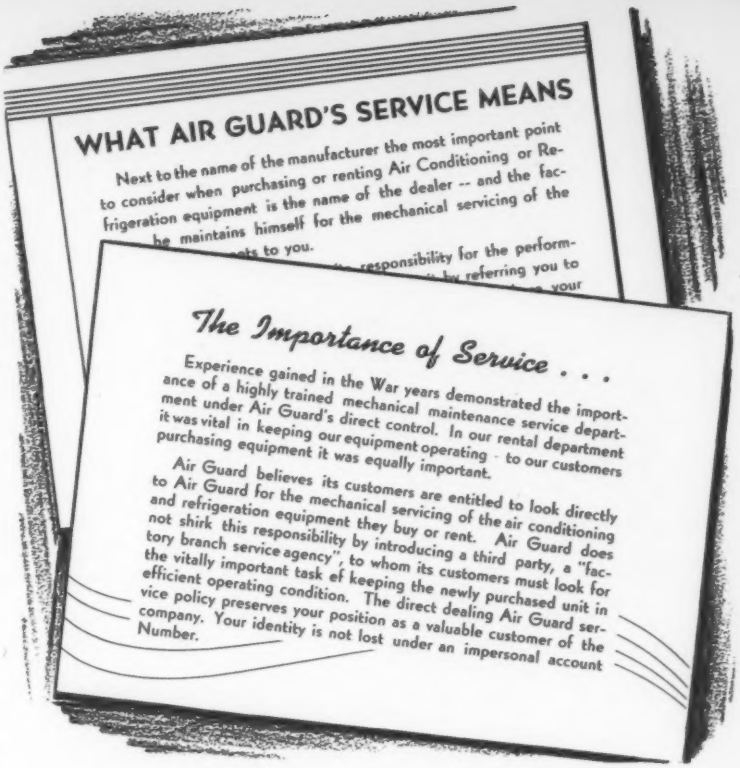
Let's take a brief look at one company that is now in the business and see, if we can, the basic points on which it operates. The company is Air Guard and Cooler Co., St. Louis, and here are some of the fundamentals of how a rental equipment business operates, as obtained in a talk with C. B. Morris, president and treasurer.

Air Guard both rents and sells refrigeration equipment, including water coolers as well as room and store coolers, but in this instance we'll consider only the room cooler phase of the company's rental operations. The company is beginning to get back to

Typical pages from Air Guard promotion folders featuring store coolers, water coolers and room coolers. Direct-mail campaigns account for most new customers—that and recommendations from present clients.

more normal activities this year, after having been restricted during the war years both by inability to obtain additional cooling equipment and by wartime limitations as to where rental equipment of this sort could be installed.

Air Guard starts its rental "selling" activities early in the year, so that prospective customers will have time to think the proposition over before it's actually time to install the equipment. It so happens that St. Louis has a rather long warm-weather season, and folks start thinking about warm weather as early as March. In localities where hot weather comes along later than it does in the Missouri city, a different time schedule on promotional material might be required. At any rate, the important thing is to get prospects thinking about the service well in advance of the time the equipment actually will be needed.


WHAT AIR GUARD'S SERVICE MEANS
Next to the name of the manufacturer the most important point to consider when purchasing or renting Air Conditioning or Refrigeration equipment is the name of the dealer -- and the fac-
he maintains himself for the mechanical servicing of the
ets to you.
responsibility for the perform-
by referring you to
your
The Importance of Service . . .
Experience gained in the War years demonstrated the importance of a highly trained mechanical maintenance service department under Air Guard's direct control. In our rental department it was vital in keeping our equipment operating - to our customers purchasing equipment it was equally important.
Air Guard believes its customers are entitled to look directly to Air Guard for the mechanical servicing of the air conditioning and refrigeration equipment they buy or rent. Air Guard does not shirk this responsibility by introducing a third party, a "factory branch service agency", to whom its customers must look for the vitally important task of keeping the newly purchased unit in efficient operating condition. The direct dealing Air Guard service policy preserves your position as a valuable customer of the company. Your identity is not lost under an impersonal account Number.

Just how importantly its service facilities figure in Air Guard's rental sales program is shown by these "samples", taken from the firm's 1947 mailing pieces.

Selling Summer Comfort

Promotion is largely by direct-mail, with a series of three or four mailings being directed to past customers for the service and to selected new prospects. These new prospects, mostly professional men (physicians, dentists, lawyers, etc.) are easily obtained from the classified telephone book listings. Examples of the type of direct-mail materials sent out for this summer's business are illustrated on these pages. All of the mailings are "packaged" pieces in that they include plugs for all three types of rental equipment — room coolers, store coolers and water coolers.

Copy is built around the comfort and convenience that each of the products affords the user during the summer months—the water coolers, of course, are promoted as year-around equipment but the room and store coolers are seasonal items.

Naturally, the number of units that can be "merchandised" on a rental basis of this kind depends on the number the dealer has available. Air Guard operates on a "first come, first served" basis; regular patrons generally are in early with their "reservations" to assure themselves of the service. These patrons also in many cases recommend the service to friends, and between long-time customers and the friends they recommend Air Guard is able to place the great majority of the units it has available for rental purposes.

The balance are placed with new prospects contacted by direct-mail, and the first spell of warm weather always brings a rash of phone calls by persons who have decided at the last minute that they'd like to have the service. These Johnnies-come-lately invariably take up what few units haven't been disposed of by earlier applicants.

The rental agreement, which the company sends out only upon request, specifies the period during which the room or store cooler is to be furnished; rental rates are based on the length of the rental period and the size and type of the equipment to be furnished.

As mentioned previously, Air Guard sells cooling equipment as well as renting it, which gives the company a two-way "shot" at prospects, if need be. However, Mr. Morris finds that a majority of customers who start out on a rental basis prefer to keep on that basis. To those who believe they may want to buy the equipment after a trial period, the company offers to apply the season's rental price, minus servicing fee, toward the purchase price.

One of the things that appeals to rental customers, Mr. Morris finds, is the freedom from having to concern themselves about maintaining the equipment. The company stresses its servicing facilities strongly in all its promotional pieces. Customers are reminded that Air Guard maintains a skilled crew of maintenance men, on call at all times, whose primary job is to see that all rental units are in first-class operating condition.

The importance of prompt, reliable service was paramount during the war years; Air Guard began capitalizing upon its facilities then and plans to promote this phase of its rental service from now on, as an important key to rental "sales." The company's staff of mechanics works year-around, handling installation and service in the spring and summer and inspecting and reconditioning units during the fall and winter in preparation for the next year's activities.

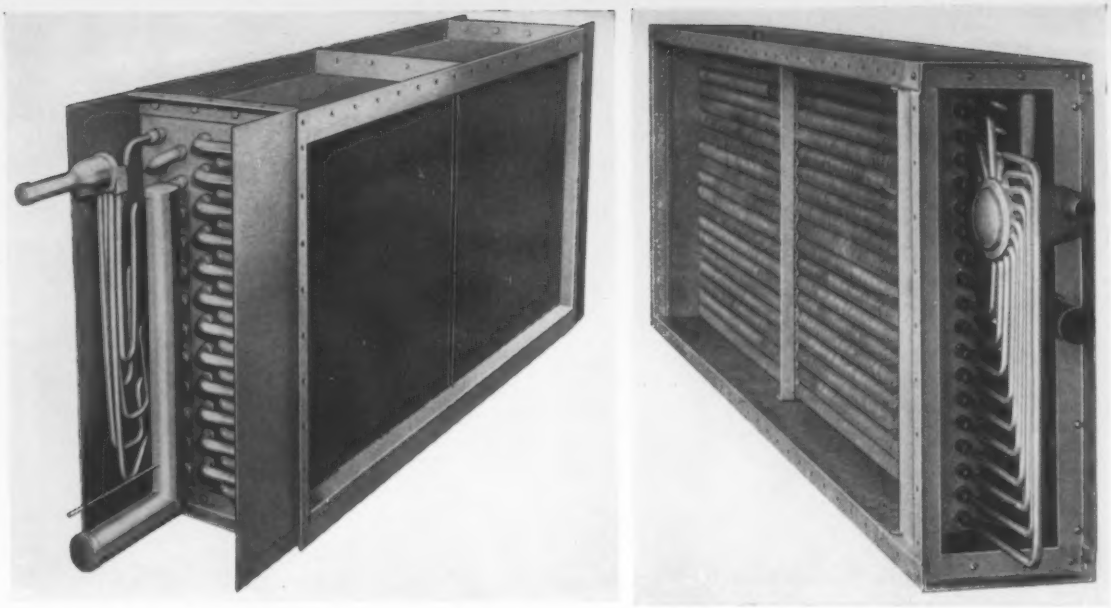


Fig. 5—Two types of direct expansion cooling coils. Left, a Trane continuous fin coil; right, an Aerofin individual fin coil.

Cooling
FOR HUMAN COMFORT
PART 7 (Continued) DETERMINATION OF EQUIPMENT CAPACITY
Direct Expansion Systems

By S. C. Moncher
Regional Manager
Electric Power Equipment Co.

DIRECT EXPANSION COILS: Surface cooling coils for use with refrigerants such as Freon or methyl chloride are usually constructed of copper tubing with cross fins of copper or aluminum. The fins may be either individual for each row of tubing, or continuous across the face of the coil, as shown in Figure 5. This figure also illustrates the various types of refrigerant distribution headers which assure effective and uniform refrigerant distribution throughout the coil.

Coils for comfort cooling installations are usually several rows deep, with four- and six-row coils being very common. Refrigerant temperatures from 40 F to 45 F are frequently used, for they result in an economical balance between condensing unit size, coil size, and power consumption. If moisture is to be removed from the air passing through the coil, as is almost always the case in comfort cooling installations, the coil surface temperature must be lower than the dew-point of the air. Often, the air does not fall below its dew-point temperature until it has passed through part of the coil. Thus, in the case of a six-row coil, the first two rows may operate dry, while the remaining rows are constantly wetted by condensing moisture.

The heat transfer value ("K" factor) of a coil is usually expressed in Btu per square foot of face area, per degree of mean temperature difference between refrigerant and air, per row, per hour. Values are for a given air velocity, and are generally based on dry coils, i.e., coils operating above the dew-point temperature of the air passing through them, so that no moisture is condensed. These K factor values, therefore, represent only the sensible heat absorbed by the coils. When moisture is condensed, the coils can also absorb an additional amount of latent heat, their heat transfer ability thereby increasing. In order to show values of this increased K factor when coils are operated wet, manufacturers' tables have been prepared listing coil capacities at given air velocities and

refrigerant temperatures for the various conditions of entering and leaving dry- and wet-bulb temperatures. A typical table is shown in Figure 6.

The heat transfer value of a coil increases with the velocity of the air over the surface of the coil. There is a practical limit, however, to the velocity of air which may be used with coils condensing moisture; for after a certain velocity, water begins to be carried off the surface of the coil and into the air stream. Depending upon the construction of the coil, this entrainment of water will start to take place at velocities from 400 to 600 feet per minute (fpm). Unless special baffles are used to eliminate entrapped moisture, or unless the air is discharged into a large plenum chamber where the moisture will have a chance to settle out, air velocities in excess of the manufacturer's recommended limit should be avoided, lest water be delivered to the conditioned room with the air supply.

The friction to which the air passing through the coil is subject increases both with the air velocity and the amount of condensed moisture on the surface of the coil. Air friction is usually expressed in inches of water. This value denotes the height in inches of a column of water having the same pressure as the pressure drop which the air experiences in passing through the coil. The amount of air friction may be determined from manufacturers' tables, and is important in determining the size of fan and motor to be used. The smaller the air friction, the lower the pressure drop, and the smaller will be the size of fan and motor required.

The efficiency of a coil decreases as the number of rows deep increases. This is due to the fact that the temperature difference between refrigerant and air decreases progressively as the air passes through the coil. Thus, if a coil has a refrigerant temperature of 40 F and is six rows deep, 80F DB air entering the first row of the coil would be 40° above refrigerant temperature. Assuming that the air leaves the coil at 55F DB, then the temperature difference applying to the last row would be only 15°, and the temperature difference pertaining to the second to fifth rows would have values between 15 and 40 degrees. In actual practice, the first row of a six-row coil will abstract about one and one half times as much heat as the third row, and about three times as much heat as the sixth row. It becomes obvious, therefore, that a coil composed of a given number of square feet of surface will have a greater effectiveness the less the number of rows deep. Inasmuch as the face area of a coil is determined by the ratio of air volume to face velocity, however, cooling coils are limited to a definite length and height. The number of rows deep must be sufficient to remove the required heat at the operating conditions. Coils as much as 16 rows deep are sometimes used in large installations, although in small installations a six-row coil is seldom exceeded.

The coil face area required may be found by dividing the air volume passing through the coil by the air velocity over the face of the coil in accordance with the following formula:

FORMULA 10

$$fa = \frac{cfm}{fv}$$ where,

fa=face area in square feet
fv=face velocity in feet per minute
cfm=air volume in cubic feet per minute

For example, with a cfm of 5000 and a desired air velocity of 500 fpm, the face area required will be

$$fa = \frac{5000}{500} = 10 \text{ sq. ft.}$$

As was pointed out above, face velocities are usually limited to about 500 fpm in order to prevent water

Fig. 6—Table of typical direct expansion cooling coil capacities prepared by The Trane Co. This table shows coil capacities at given air velocities and refrigerant temperatures for the various conditions of entering and leaving dry-bulb and wet-bulb temperatures.

	Initial Wet Bulb	Rows Tubes	Initial Dry Bulb 88° Final D.B.	Final W.B.	Tons*	Initial Dry Bulb 84° Final D.B.	Final W.B.	Tons*	Initial Dry Bulb 80° Final D.B.	Final W.B.	Tons*	Initial Wet Bulb	Rows Tubes	Initial Dry Bulb 88° Final D.B.	Final W.B.	Tons*	Initial Dry Bulb 84° Final D.B.	Final W.B.	Tons*	Initial Dry Bulb 80° Final D.B.	Final W.B.	Tons*
400 FPM FACE VEL. 40° REFRIGERANT	67°	2	69.4	59.9	0.76	67.3	59.9	0.76	65.4	59.9	0.76	70°	2	70.3	62.3	0.86	68.5	62.3	0.86	66.5	62.3	0.86
		3	63.1	56.8	1.05	61.7	56.8	1.05	60.3	56.8	1.05		3	64.4	59.1	1.19	63.1	59.1	1.19	61.7	59.1	1.19
		4	58.2	54.2	1.29	57.5	54.2	1.29	56.6	54.2	1.29		4	59.5	56.1	1.47	58.5	56.1	1.47	57.6	56.1	1.47
		5	54.8	52.0	1.48	54.2	52.0	1.48	53.5	52.0	1.48		5	55.5	53.5	1.70	54.9	53.5	1.70	54.3	53.5	1.70
		6	51.7	50.0	1.65	51.3	50.0	1.65	51.0	50.0	1.65		6	52.7	51.4	1.88	52.3	51.4	1.88	51.9	51.4	1.88
		8	47.5	46.9	1.89	47.4	46.9	1.89	47.2	46.9	1.89		8	48.3	47.9	2.17	48.2	47.9	2.17	48.0	47.9	2.17
400 FPM FACE VEL. 45° REFRIGERANT	67°	2	71.0	61.1	0.64	69.3	61.2	0.63	67.3	61.2	0.63	70°	2	71.5	63.6	0.73	70.0	63.6	0.73	68.1	63.6	0.73
		3	65.3	58.7	0.88	64.0	58.7	0.87	62.6	58.7	0.87		3	66.2	60.8	1.02	65.0	60.8	1.02	63.6	60.8	1.02
		4	61.1	56.6	1.07	60.1	56.6	1.07	59.3	56.6	1.07		4	62.2	58.5	1.25	61.3	58.5	1.25	60.2	58.5	1.25
		5	57.8	54.8	1.24	57.2	54.8	1.24	56.5	54.8	1.24		5	58.7	56.4	1.44	58.1	56.4	1.44	57.6	56.4	1.44
		6	55.0	53.2	1.37	54.7	53.2	1.37	54.3	53.2	1.37		6	56.2	54.6	1.61	55.7	54.6	1.61	55.1	54.6	1.61
		8	51.5	50.7	1.59	51.3	50.7	1.59	51.1	50.7	1.59		8	52.3	51.7	1.86	52.1	51.7	1.86	51.9	51.7	1.86
500 FPM FACE VEL. 40° REFRIGERANT	67°	2	71.2	60.8	0.83	69.2	60.8	0.83	67.1	60.8	0.83	70°	2	72.3	63.4	0.94	70.1	63.4	0.94	68.0	63.4	0.94
		3	65.4	58.2	1.16	64.0	58.2	1.16	62.6	58.2	1.16		3	66.6	60.5	1.31	65.0	60.5	1.31	63.6	60.5	1.31
		4	60.7	55.8	1.43	59.7	55.8	1.43	58.6	55.8	1.43		4	61.8	57.8	1.64	60.8	57.8	1.64	59.7	57.8	1.64
		5	56.8	53.6	1.68	56.2	53.6	1.68	55.3	53.6	1.68		5	58.3	55.5	1.91	57.5	55.5	1.91	56.7	55.5	1.91
		6	54.1	51.7	1.88	53.4	51.7	1.88	53.0	51.7	1.88		6	55.1	53.4	2.14	54.7	53.4	2.14	54.1	53.4	2.14
		8	49.6	48.6	2.19	49.3	48.6	2.19	49.1	48.6	2.19		8	50.4	49.8	2.52	50.1	49.8	2.52	49.9	49.8	2.52
500 FPM FACE VEL. 45° REFRIGERANT	67°	2	72.7	61.8	0.71	70.5	62.0	0.69	68.5	62.0	0.69	70°	2	73.2	64.4	0.80	71.3	64.4	0.80	69.2	64.4	0.80
		3	67.1	59.6	0.98	65.7	59.8	0.96	64.3	59.8	0.96		3	68.2	62.0	1.12	66.7	62.0	1.12	65.1	62.0	1.12
		4	63.1	57.7	1.21	62.0	57.9	1.19	61.0	57.9	1.19		4	64.0	59.8	1.40	63.1	59.8	1.40	62.0	59.8	1.40
		5	59.7	56.0	1.41	58.9	56.1	1.40	58.2	56.1	1.40		5	60.8	57.9	1.63	60.0	57.9	1.63	59.3	57.9	1.63
		6	57.2	54.5	1.58	56.6	54.6	1.57	56.0	54.5	1.57		6	58.2	56.2	1.83	57.7	56.2	1.83	57.2	56.2	1.83
		8	53.2	52.0	1.85	53.1	52.1	1.84	52.9	52.1	1.84		8	54.2	53.3	2.15	53.9	53.3	2.15	53.7	53.3	2.15
600 FPM FACE VEL. 40° REFRIGERANT	67°	2	72.6	61.5	0.89	70.4	61.6	0.88	68.4	61.6	0.88	70°	2	73.2	64.1	1.01	71.1	64.1	1.01	68.9	64.1	1.01
		3	67.0	59.1	1.25	65.2	59.1	1.24	63.9	59.1	1.24		3	68.2	61.5	1.42	66.6	61.5	1.42	64.9	61.5	1.42
		4	62.5	56.9	1.57	61.2	56.9	1.56	60.0	56.9	1.56		4	63.8	59.1	1.78	62.6	59.1	1.78	61.4	59.1	1.78
		5	58.7	56.0	1.84	58.1	55.2	1.83	57.3	55.2	1.83		5	60.0	56.9	2.09	59.2	56.9	2.09	58.3	56.9	2.09
		6	55.9	53.1	2.08	55.1	53.1	2.07	54.7	53.1	2.07		6	57.0	54.9	2.37	56.4	54.9	2.37	55.8	54.9	2.37
		8	51.3	50.0	2.46	51.0	50.0	2.46	50.7	50.0	2.46		8	52.4	51.5	2.81	52.1	51.5	2.81	51.8	51.5	2.81
800 FPM FACE VEL. 45° REFRIGERANT	67°	2	74.1	62.3	0.77	71.5	62.5	0.74	69.4	62.6	0.73	70°	2	74.5	65.1	0.85	72.3	65.1	0.85	70.1	65.1	0.85
		3	69.0	60.3	1.07	67.2	60.6	1.04	65.3	60.6	1.04		3	69.5	62.9	1.20	67.8	62.9	1.20	66.3	62.9	1.20
		4	64.7	58.6	1.32	63.4	58.8	1.30	62.2	58.8	1.30		4	65.5	60.9	1.51	64.4	60.9	1.51	63.3	60.9	1.51
		5	61.6	57.1	1.54	60.6	57.2	1.52	59.7	57.2	1.52		5	62.5	59.1	1.78	61.7	59.1	1.78	60.7	59.1	1.78
		6	58.8	55.6	1.75	58.0	55.7	1.73	57.3	55.7	1.73		6	59.9	57.5	2.01	59.3	57.5	2.01	58.6	57.5	2.01
		8	54.8	53.1	2.07	54.5	53.3	2.05	54.1	53.3	2.05		8	55.9	54.7	2.40	55.3	54.7	2.40	55.1	54.7	2.40

*TONS PER SQ. FT. OF FACE AREA. TABLE BASED ON FREON OR METHYL CHLORIDE 5° SUPER HEAT.

from being carried off the coil, and in order to strike an economic balance between coil size and fan and motor size.

AIR TEMPERATURES ENTERING COIL:

(a) Room Condition of 80F DB—67F WB

The total air volume necessary to maintain this room condition has been determined as 4000 cfm, of which it is required that 350 cfm be outdoor air. This leaves 3650 cfm as the volume of room air required. The temperatures of the mixture resulting when these proportions of air are combined may be calculated from Formulas 8 and 9 as described in Part 6 (April, 1947 issue). They may also be determined by measurements on the psychrometric chart. By way of illustration, both methods will be demonstrated here.

Formula 8 states that the dry-bulb temperature of the mixture is equal to the weighted average of the dry-bulb temperatures of the two air streams. Therefore,

$$t=\frac{(95\times350)+(80\times3650)}{4000}=82.5\text{F DB}$$

Formula 9 states that the heat content of the mixture may be found by taking the weighted average of the heat contents of both air streams as follows:

$$h=\frac{(38.50\times350)+(31.54\times3650}{4000}=$$

32.1 Btu/lb. dry air

By interpolation of the heat content values given in Table I (August 1946, page 46), the wet-bulb temperature of the mixture is found to be 67.8 F.

These values may also be determined by linear measurements on the line drawn between the points representing room conditions and outdoor air conditions on the psychrometric chart. Figure 1 (May, 1947 issue) shows this line drawn and having a length of 1⅞". The outdoor air is $^{350}/_{4000}$ = .088, or 8.8% of the total air supply representing a distance of 1⅞" × .088 = .165", or roughly 3/16". This distance measured off on the line from the point representing room conditions gives the point representing the state of the mixture. We measure from the point representing room conditions inasmuch as we have taken the ratio of the lesser quantity of the mixture, and we know that the final temperatures will be closer to the room temperatures than the outdoor air temperatures. Had we considered the ratio of the greater quantity in the mixture, we would have measured from the point represented by the outdoor air.

Reading the coordinates of the mixture as defined by the point located, we find that they check closely with the calculated values.

(b) Room Condition of 81F DB—66F WB

Inasmuch as a total of 3300 cfm are required to maintain this room condition, the air entering the cooling coil will consist of a mixture of 350 cfm of outdoor air at 95F DB—75F WB and 2950 cfm of room air at 81F DB—66F WB. The resultant temperatures may be calculated by the use of Formulas 8 and 9, or by use of the psychrometric chart.

From Formula 8, the dry-bulb temperature of the mixture is

$$t=\frac{(95\times350)+(81\times2950)}{3300}=82.5\text{F DB}$$

From Formula 9, the heat content of the mixture is

$$h=\frac{(38.50\times350)+(30.75\times2950)}{3300}=$$

31.7 Btu/lb. dry air

Interpolating from Table I, the wet-bulb temperature corresponding to this heat content value is 67.2 F.

These values may be checked by use of the psychrometric chart. Figure 1 (May issue) shows a line ruled between the points 95F DB—75F WB and 81F DB—66F WB. This line measures 2⅛". Inasmuch as the outdoor air constitutes $^{350}/_{3300}$, or 10.6% of the mixture, the coordinates of the point representing the temperatures of the mixture may be found by laying off on this line a distance equal to 2⅛" × .106 = .226", or approximately 7/32". This distance is measured from the point representing room conditions, inasmuch as the temperatures of the mixture will be closer to room temperatures than the outdoor temperatures. The coordinates of the mixture as read on Figure 1 are 82.5F DB—67.2F

Continued on page 89

Now You See It, Now You Don't

UNCLE SAM'S wartime camouflage artists might well have picked up a pointer or two from the engineers who installed this Chrysler Airtemp packaged air conditioner in the building management offices of J. A. Bruening & Co. in Kansas City's Dwight building.

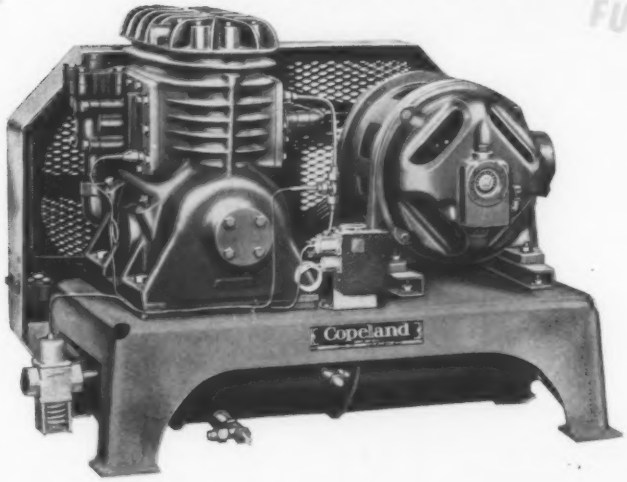
Installed within the closet shown in the center of these photos, the unit is completely concealed by the addition of a bit of paneling and a framed picture.

Conditioned air is delivered to the office space through four supply air grilles (two of which are shown) located near the ceiling, one on each of the four sides of the closet. The return air grille is visible just below the framed picture.

FOR A WIDE MARKET

LOCKER PLANTS
AIR CONDITIONING
WALK-IN COOLERS
SLAUGHTER HOUSES
DAIRY STORES
FUR STORAGE
BAKERIES
NURSERIES
COLD STORAGE
BOTTLING PLANTS

IMMEDIATE DELIVERY



Copeland 3, 5 and 7½ H.P. Units

Aggressive sales action can be followed up with prompt delivery, thanks to Copeland's production achievement. Cash in on the big, waiting market. Profit on these top values for locker plants, walk-in coolers, large food and dairy stores and air-conditioning installations. Order these 3, 5 and 7½ H.P. units today!

MODEL 303-W	MODEL 503-W	MODEL 750-WFH
3 H.P.	5 H.P.	7½ H.P.
$739.00 LIST	$1091.50 LIST	$1429.50 LIST
With Control—Less Starter	*With Control—Less Starter*	*With Control—Less Starter*

COPELAND REFRIGERATION CORPORATION, SIDNEY, OHIO

Dan Mandery has been appointed service manager of Universal Cooler Div., International Detrola Corp. Mr. Mandery has been associated with the Hussmann-Ligonier Co. for the past 10 years, and before that was a sales manager in the Omaha, Neb., area for Frigidaire Div. General Motors Corp.

●

E. E. Landis, formerly assistant service manager of Frigidaire Div., General Motors Corp., has been promoted to service manager of the division, succeeding **Paul V. Sprout,** who becomes branch manager for Frigidaire Sales Corp. in Albany, N. Y. **H. E. Van Scoyk** will continue to serve as assistant service manager, but with broader responsibilities.

●

A. Kenneth Fribance and **Everett A. Fairlamb** have been added to the industrial sales division of National Gypsum Co. Mr. Fribance will manage industrial insulation sales, while Mr. Fairlamb will develop new

Mr. Fribance

Mr. Fairlamb

products and new sales outlets. For the past three years Mr. Fribance had been sales representative in the Buffalo and western New York territory for Arrow Hart & Hegeman Electric Co., Hartford, Conn. Mr. Fairlamb served during the war as a navigator with the Eighth Air Force.

●

Edward L. Stalnecker, household sales manager for Nash-Kelvinator Corp. in the Cleveland zone since 1944, has been promoted to manager of all company activities in that zone.

●

Joseph P. Flynn has been appointed north central regional manager of Crosley Div., Avco Mfg. Corp., and **Mrs. Catherine Beck** has been named home economist. Mr. Flynn, who will make his headquarters in Milwaukee, will cover Wisconsin, Minnesota, North and South Dakota, and parts of Michigan and Illinois. Since 1945 he had been appliance merchandise manager of Leath & Co., Chicago. Mrs. Beck will assist Mrs. Selma M. Andrews, Crosley's director of home economics.

Mrs. Beck

●

Harry C. Beaver, vice-chairman of the board of directors and formerly president of Worthington Pump & Machinery Corp., died suddenly April 2nd in New York City.

●

Edward R. Taylor, formerly director of advertising and sales promotion of Zenith Radio Co., has been appointed to the newly created post of merchandising manager of Hotpoint, Inc. In this capacity he will direct all of the company's product distribution service activities.

Wallace A. (Wally) Henry has been named to represent Remco, Inc., Pittsburgh manufacturer of electrical and refrigeration equipment, in the territory consisting of Minnesota, Wisconsin, upper Michigan, Iowa, North and South Dakota, Montana, and eastern Nebraska. He will make his headquarters in Minneapolis. Prior to the war, during which he served in various engineering capacities with the Navy, Mr. Henry was district manager for Walker Mfg. Co., Racine, Wis.

●

A. M. Schmitz, eastern field engineer for the electric refrigeration division of Servel, Inc., has been named manager of the company's northeast district. He will live in Albany, N. Y., and supervise activities in all of the New England states as well as in up-state New York.

●

Cecil Volk has been appointed sales and promotion manager of General Refrigeration Corp. of New York, manufacturer of commercial refrigeration equipment. Mr. Volk holds the distinction of having opened the first frozen food store in New York.

●

Howard M. Jones has been appointed sales manager of the refrigeration division of Kerotest Mfg. Co., and **James A. Norris** has been

Mr. Jones

Mr. Norris

named sales manager of the company's West Coast division. Mr. Jones comes to Kerotest from Uni-

Continued on page 78

"It's almost automatic... *and fool-proof!*"

More than any other condensing unit of open type design, the Mills Direct Drive is automatic in performance and fool-proof in operation. In those qualities it ranks with hermetics, while at the same time retaining the accessibility and swift repair characteristics of belted models.

Smaller in size, lighter in weight, and more efficient in comparable ratings, the Mills Direct Drive is the logical choice where space and accessibility are determining factors.

MILLS
Direct Drive COMPRESSOR

First post-war addition to a distinguished family of air- and water-cooled condensing units

MILLS INDUSTRIES, INCORPORATED · 4100 FULLERTON AVENUE · CHICAGO 39, ILLINOIS

Nailin

Many commercial refrigeration dealers "miss the boat" because they don't make the most of prospecting for new sales opportunities. Here's the story of an outstandingly successful direct mail promotion program

Mrs. Rostock handles the Addressograph machine through which Arcticaire plans to send out 120,000 pieces of promotion this year. The cabinet at the left holds more than 6,500 address plates divided into 75 classifications.

Ted Rostock sells a meat case to a butcher who has responded to the firm's intensive direct mail program.

Success Story OF THE MONTH

By Robert A. Latimer

DIG deep for new sales opportunities, and once you get a prospect on the string keep steadily bombarding him with intelligently planned promotion pieces slanted at his specific refrigeration needs.

That's the aggressive sales formula which has enabled young (he's only 35) Ted Rostock to build the dollar volume of his Kansas City, Mo., commercial refrigeration and air conditioning firm from $3500 in 1938 to $186,000 last year.

Arcticaire Refrigeration Co., operated by Mr. Rostock and his wife, was literally founded on a combination of efficient sales "prospecting" and effective direct-mail promotion. The company is distributor and dealer for Tyler, Gemco and Lipman commercial equipment, with a large shop equipped for manufacturing custom refrigeration for a variety of applications.

Mr. Rostock actually got his start in refrigeration when he contracted in 1938 for the entire stock of used domestic refrigerators turned in on trade to the St. Joseph (Mo.) Power & Light Co. Forming "Blue Flash

'Em By Mail

Service Co." he set up a reconditioning shop only a couple of blocks away from his new $50,000 building in Kansas City, and using assembly-line techniques was able to profitably overhaul and resell hundreds of used refrigerators in the Kansas City market. These, selling anywhere from $50 to $100, created a lot of attention in budget-minded Kansas City, and in addition, taught Mr. Rostock much about the need for good repair and sales service in his area. A bit later he wangled several new appliance franchises, and finding that the commercial market showed still more possibilities, he took on leading lines of walk-in and reach-in refrigeration, water coolers, and air conditioning units.

Sales grew rapidly in both fields, while the Rostocks enlarged the original Blue Flash quarters and set up a showroom. Early in his selling career, Mr. Rostock formed the habit of checking grocery stores, drugstores, shops, etc., for possible commercial refrigeration sales, which formed the basis for his present direct-mail system. Wherever he went, answering service calls or on shopping trips, he jotted down the names of prospects. Each month Mrs. Rostock sent out literature on applicable refrigeration, with an invitation to call a Blue Flash man in whenever ready to estimate new equipment. Sales grew larger, more franchises were added, and eventually Mr. Rostock went into the manufacturing of custom refrigeration equipment, finding that factory products would not always fill the requirements of his customers.

Right from the Start

Two years ago, when the Blue Flash Service Co. became Arcticaire, Ted Rostock began planning his new operation around the type of promotion which he had found most successful—steady banging away at refrigeration prospects with direct-mail until the prospect responded. Using plenty of direct-to-the-customer advertising in the past had meant arduous scribbling by hand, typewritten letters, etc., which consumed a lot of Mrs. Rostock's time. What was desired, both of the Rostocks felt, was a beautiful showroom combined with an automatic direct-mail advertising plan utilizing modern machine equipment, and backed up by custom-building facilities capable of meeting the needs of any customer who couldn't be sold standardized equipment.

The result is the $50,000 building pictured, which combines maximum display visibility with a machine-mailing department, and a basement refrigeration manufacturing plant. With 10,000 square feet on two floors, the building has 15 huge display windows, combined with a glazed tile facade, permitting even motorists whizzing by at 40 miles an hour to get a clear view of self-service refrigerators, reach-in boxes, dry bottle boxes, air conditioners and frozen foods cases which fill up the sales floor.

Arcticaire's new home is completely air conditioned with a split system permitting individual cooling of both the showroom and the office area in the rear, and a stepped-up fluorescent lighting system maintains 50 foot-candles of illumination over all displays at night. The building is an eye-catcher from any angle, resulting in plenty of drive-in trade.

However, since direct-mail built up his business, Mr. Rostock doesn't plan to let it down. The business office runs entirely across the rear of the building and includes desks for himself and Mrs. Rostock, a Cardex cross-reference system which covers every sale or repair job the firm has carried out, and automatic mailing equipment incorporating separate files, Addressograph machine and

This is the new $50,000 "house that Ted built" with profits resulting from his promotional activities.

Addressograph plate storage cabinets.

"We hope to mail 120,000 pieces of literature on various types of refrigeration equipment in 1947," Mr. Rostock indicated, "consisting of manufacturers' pamphlets and specialty jobs of our own. We have found that sales volume is directly dependent upon the amount of direct-mail which goes out of the office, and thus we've put it on a machine basis throughout to intensify this form of advertising."

Future plans include the food retailing field with emphasis on frozen foods equipment, specialty refrigeration for the small commercial user who has bulked large in the company's $186,000 volume last year, and air conditioning. Also, although it has been difficult to obtain materials and personnel, Mr. Rostock will continue to manufacture custom refrigeration equipment under the Arcticaire label. His facilities are sufficiently large in the building to produce package air conditioning units, food refrigeration or multiple systems as desired.

All of these markets will be sold through direct-mail, with refinements of the steady "plugging away" which characterized the Rostocks' early days. First asset in this type of merchandising is the visible records file in the center of the office, in which pull-out drawer cards, more than 5,000 of them, list all customers served by the Arcticaire firm, every call on them, repair work done, new equipment sold, and most important, the probable future needs of the prospect. Unusually liberal with direct-mail advertising, the company subjects each name which comes under the "prospect" heading to two years of continuous promotion, transferring the card to the "dead" file only after 24 fruitless months have gone by. Once a month, Mrs. Rostock goes through the visible records, extracts a list of all those whose records show the need of new refrigeration equipment, and distributes direct-mail according to this list. There is little or no waste to the system—the man who needs a six-door reach-in refrigerator receives direct-mail folders only on this piece of equipment, while the doctor who is considering installation of a 5-ton package conditioner gets nothing but air conditioning promotional pieces.

As each customer's name goes into the visible record file, Arcticaire makes out an Addressograph plate for him, at a cost of 6 cents. There are 6,000 plates in the cabinet at the right of the office; this number will be expanded to 10,000 during 1947. Four outside salesmen, working regular districts, turn in the names of new prospects to be added to the file and consequently to the direct-mail list. Only when two years of continuous promotion has failed does the card leave the file.

Next, to cover the entire refrigeration market with microscopic precision, Mrs. Rostock has used the slack months during each of the past two years to build up a second "prospect file" composed entirely of potential refrigeration buyers who have not been contacted by the firm. This undertaking necessitated going through the Kansas City telephone directory, classifying under separate headings the names and addresses of everybody in the city who could logically be expected to buy either refrigeration or air conditioning. and listing them by groups. There are 75 such groups, some of them with as many as 612 names, representing schools, cafeterias, hospitals, meat markets, medical clinics, physicians, lawyers, and other potential markets. All of these names and addresses, which took months to compile, have been transformed into Addressograph plates, and receive a constant bombardment of direct-mail carrying the Arcticaire banner—each piece aimed directly at a specific need.

Lastly, Arcticaire has built a huge list of independent refrigeration installation and service men in the Midwest. Credit rating of each concern is checked before its name is included. This list receives penny-postcard mailings from Arcticaire for a quite different purpose—sales of traded-in equipment. Every three months Mr. Rostock prints up hundreds of postcards listing compressors, heat exchangers, coils, cabinets, hardware, expansion valves, etc., priced for quick sale. As many as 25 items may be listed at a time. This simple program, also handled automatically by the Addressograph equipment, has solved the problem of what to do with trade-ins, leaving Arcticaire free to deal exclusively with new equipment. Seldom is more than one postcard mailing needed.

Rebuilding the Coldspot Unit

By A. G. Bate

This series of articles is intended to cover certain specific phases of rebuilding work on Coldspot open-type condensing units. It is an "advanced" series, in that it assumes that the service man has a general knowledge of how to change motors, thermostats, etc., and wants to know how to handle some of the problems which otherwise would necessitate returning the units to the factory.

1. REPLACING VALVE BLADES

AFTER some years of use, the Coldspot valve blades become scored and worn, and must be replaced. The mechanic must use micrometers to insure precision workmanship. The length of the blades should be .001" shorter than the length of the cylinder; thus a cylinder 1.250" in length should be fitted with blades 1.249" in length, the .001" difference being taken up by the oil seal. The blades will then be the exact length of the rotor. Normally, cylinders may not be exchanged, as there is .001" to .005" difference in the length.

On the working surface of the blades, the corners of the blades should have a $1\frac{3}{16}$" radius, if the cylinder is $1\frac{5}{8}$" in diameter, and the width of this radius should be about $\frac{1}{32}$", leaving the middle of the blade flat; then only the outside corners of the blades actually follow the contour of the cylinder. The space between the flat part of the blade and the cylinder is taken up by the oil seal, and each blade will have two pumping surfaces. The width of the blade should be .003" to .004" less than the depth of the rotor slot. Blades furnished to the trade, if properly planed, will have the proper radius when received by the service man. In regard to thickness, the blades should be lapped on Carborundum paper (400A) until the blade will fall out when the rotor is turned around. The blades, of course, should be bathed in oil for this test.

REFRIGERATION INDUSTRY *News*

SNEAK LICENSE ACT BLOCKED IN MASS.

A union-supported bill requiring licenses for operators of even comparatively small refrigerating equipment, introduced in the Massachusetts legislature, apparently has been blocked as a result of activity by the RSES Western Massachusetts Chapter No. 1, Springfield, Mass. Statewide grocers' associations, hotelmen and a restaurant owners' group aided RSES members in their efforts against the measure.

The bill, introduced as House Bill No. 898, would require that any system containing more than 50 lbs of refrigerant be operated by a licensed engineer or a person with a state certificate.

In addition, a licensed operator would be needed if any system containing less than 20 lbs. of refrigerant is operated or maintained in a public building or exhibition hall for exhibition or demonstration purposes. Systems containing 200 lbs. or less and being fully automatic would require only one operator. The bill had been petitioned for by the International Union of Operating Engineers. Eligibility to operate the systems covered by the proposed act would be limited.

BREWER-TITCHENER BUYS 2 PLANTS

Acquisition by Brewer-Titchener Corp. of the plants and equipment of American Chain & Ladder Co., Inc. at New Milford and Great Bend, Pa. has been announced by F. A. Ellis, manager of the Crandal-Stone division of Brewer-Titchener at Binghamton, N. Y.

Both plants will be used for the manufacture of BTC food freezer cabinets, and will free space at the Binghamton plant for increased production of evaporator plates, liners and bunkers.

OTTER NOW PHILCO GENERAL SALES MGR.

John M. Otter has been promoted to general sales manager of Philco Corp., announces Thomas A. Kennally, vice-president in charge of sales. Mr. Otter has been with Philco since 1926, and for the past three years was sales manager of the Radio Division.

5 NEW COMMERCIAL POSTS AT FRIGIDAIRE

Five new sales management posts have been created within the Commercial Refrigeration Sales Department of Frigidaire as part of a current nationwide expansion program. The new managerships increase the Commercial Sales sections from two to seven.

J. A. Smith has been named manager of Farm and Locker Market sales. Air Conditioning sales are headed by C. F. Wood. New manager of Special Applications is G. A. Hayner. G. H. Ewing has been made manager of Case and Fixture sales. L. E. Smith is new manager of Water and Beverage Cooler sales.

H. A. Beck, manager of Ice Cream Cabinet sales, and R. W. Pocock, manager of National Business sales, continue to head those departments, and A. C. Freimann continues as assistant Commercial Sales manager.

AVIATION CORP. OK'S CHANGE IN NAME

Stockholders of The Aviation Corp. have approved changing the company's name to Avco Mfg. Corp. The change results from a broad shift in character of the company's operations during recent years, as the firm now is a widely diversified manufacturing organization with more than three-fourths of its assets in fields other than aviation.

FRIGIDAIRE SALES REACH '41 LEVEL

Sales of Frigidaire products during the last three months of 1946 had reached the average 1941 level, the 38th annual report to stockholders of General Motors Corp. covering 1946 operations reported. The report asserted that sales of appliance products — refrigerators, ranges and water heaters —were approximately the same in 1946 as in 1940 and were 80% of the 1941 total. Domestic sales volume in the commercial and air conditioning fields was approximately the same as in 1941, the company annual report revealed.

SWISS SOLDER SOLD UNDER NEW NAME

Name of the new aluminum solder from Switzerland, which is being manufactured and distributed exclusively in this country by Alsoco Corp., has been changed from Prolyt to Alsoco.

390,126 HOUSEHOLD MODELS SHIPPED IN TWO MONTHS

World sales of 390,126 household refrigerators in the first two months of 1947 were reported to National Electrical Manufacturers Association by 11 producers who are NEMA members. January sales totaled 211,074 units, and February sales 179,052 units.

Shipments were well above those reported by the Bureau of the Census for the same two months of 1946, which were, respectively 100,701 and 64,609 units; but they were well behind comparable 1941 totals, which stood at 383,000 for January and 365,000 for February. For the year 1946, NEMA reported world sales by member companies of 1,907,662 refrigerators.

Companies reporting included Admiral, Crosley, Coolerator, Hotpoint, Frigidaire, General Electric, Gibson, Kelvinator, Norge, Seeger and Westinghouse.

HEAD CALIFORNIA RSES

New officers and directors of the California Refrigeration Service Engineers Society were elected at the convention held by this group during the first annual Western Refrigeration Exposition. Left to right around the table: H. T. McDermott, international secretary; A. H. Brundage, second vice-president; Mrs. Gerald Kennedy, recording secretary; J. Pat Riley, president; Rowland F. Cooke, first vice-president; Gerald Kennedy, secretary; Merle Soden, educational director; W. W. Allison, international president. Back row, left to right: Frank Frazier, director; Stillman Peck, director; J. C. Rodgers, director; Allyn W. Schoen, director; M. R. Hanks, treasurer; William Wharton, director; Leo Kannon, director; Everett Brown, sergeant-at-arms; Vernon E. Denny, assistant secretary; Norman Overwesser, director.

Science Paves the Way For Drier "Freon-12"

A new method of measuring the amount of moisture in "Freon" refrigerants, developed by members of the research staff of Kinetic Chemicals, Inc., will help to insure the keeping of the moisture content of "Freon-12" as supplied by the producer to not more than 10 parts per million, according to W. W. Rhodes, sales director of the company.

The new method was described to the recent American Chemical Society meeting at Atlantic City by A. F. Benning, A. A. Ebert and C. F. Irwin of the research staff of Kinetic Chemicals. It makes use of the infrared spectrophotometer, and is capable of determining the amount of water with an accuracy of 1 part per million. An analysis can be made in five minutes.

Infrared (invisible) light with a wavelength of 2.67 microns (about 1/10 inch) is passed through a transparent cell filled with the sample to be tested. "Freon" absorbs very little of the radiation at this wavelength, but water strongly absorbs this type of invisible light. By means of a device which measures and automatically records the intensity of the infrared light before and after it has passed through the test cell, the amount of water present may be read from a calibrated scale.

The following statement by Mr. Rhodes explains how the new moisture measuring method operates, and what the lower moisture content development means to the refrigeration industry in general:

"The manufacturers of electric household refrigerators sometime ago conceived the idea that the household refrigerator of the future must contain a compartment for holding frozen foodstuffs. It is now apparent that almost every new model will contain such a compartment.

"In general, instead of the smaller evaporator employed for making ice cubes and storing them, the large evaporator is now the vogue and evaporator temperatures have been decreased to the point where 10 F. or lower may be maintained within this compartment.

"During the postwar planning period Kinetic Chemicals, Inc. sent a delegation of research chemists and engineers to meet with the research men of those organizations in the refrigerating machinery industry who maintain laboratories for exploring the possibilities of new models of refrigerating equipment. These research groups were asked by the men of Kinetic Chemicals what their particular problems were and what could be done to serve them better.

"Problems, such as copper plating and others that have always been studied, were discussed, but the one problem in common and the most important problem posed by the refrigerating engineers was the matter of moisture in refrigerants.

"On March 25, 1931, Kinetic Chemicals issued Technical Paper No. 8 and the first specification for "Freon-12" read as follows:

"It shall contain not more than .0025% moisture (H_2O) by weight when tested by Method No. 1."

"Method No. 1 was a refined method of estimating moisture by means of conventional P_2O_5 tubes. This method had been employed for several decades to estimate the amount of moisture in refrigerants.

"The figure of 25 parts per million in 1931 was an exceedingly low figure for moisture in any refrigerant. Twice this amount of moisture was customary in many refrigerants and even today 40 parts per million is allowable in some refrigerants.

"The refrigerating engineers thought that it would be very helpful to have the moisture content of "Freon-12" reduced so that it would not exceed 10 parts per million. It is a well-known fact that it is nearly impossible to remove all of the moisture from any sort of a refrigerating machine and, consequently, if the refrigerant entering the system is of low moisture content, when equilibrium is achieved the apparatus will function properly. Boiled down, this means that the refrigerant is expected to be a blotter and take up moisture from the surfaces of the system.

"The postwar refrigerator, providing a compartment for holding frozen footstuffs, could not be a success unless there was freedom from freezing at the expansion valve. Evaporator temperatures would have to be dropped at least 15 F. with the attendant risk of freezing these valves, if the refrigerant was not drier than any refrigerant had ever been before.

"It was, therefore, apparent to the research groups representing the refrigerating machinery industry and the group representing Kinetic Chemicals, Inc. that "Freon-12" would have to be supplied with a moisture content of not more than 10 parts per million.

"Apparatus was ordered by Kinetic Chemicals for achieving this result and has been installed for over a year. It is working very satisfactorily and today in ton drums the moisture content of "Freon-12" never exceeds 8 parts per million and the majority of the production is at 5 parts per million. In the cylinders it is somewhat higher but seldom exceeds 10 parts per million, and when additional equipment is received and installed it is predicted that even in cylinders the moisture content will not exceed 8 parts per million.

"However, the problem of analyzing "Freon-12" became very embarrassing as in the range of 0 to 10 parts per million it is exceedingly difficult by the P_2O_5 method to make a good analysis. Most analysts are not fitted temperamentally to exercise the extreme care necessary to secure a credible result. The necessity, therefore, was for a method of analysis which would eliminate human error and make it possible for the average analyst to secure a good result.

"The problem was attacked by A. F. Benning, A. A. Ebert and C. F. Irwin of the research staff of Kinetic Chemicals, Inc. and they have perfected an entirely new method of analyzing "Freon-12," adapting for their purpose the Beckman Infrared Spectrophotometer IR2, an ingenious instrument developed and manufactured by the National Technical Laboratories of South Pasadena, Calif. One of these instruments is now installed in the laboratories of Kinetic Chemicals, Inc.

"An over-simplification of what happens in this instrument is that monochromatic infrared radiation of 2.67 microns wavelength is passed through a cell which has quartz windows. The windows are sealed with "Teflon" gaskets and the absorption path is exactly 4 inches long. The "Freon-12" absorbs very little radiation at this wavelength but the water in the "Freon-12" absorbs strongly in accordance with Beer's Law. Since quartz transmits well to a wavelength of about 3 microns, there is little absorption in the windows of the cell at a wavelength of 2.67 microns.

"Accordingly, the amount of infrared light transmitted varies with the amount of water present and this transmitted light is focused on a very sensitive thermocouple coated with a reagent which absorbs the heat. The heat raises the temperature of the thermocouple and its equivalent in electrical energy is amplified by radio tubes and this current in turn actuates a sensitive galvanometer, the pointer of which indicates the amount of moisture present in the sample. The galvanometer has of course been calibrated from samples of "Freon-12" of known moisture content.

"In operation a tube containing a sample of "Freon-12" is connected to the cell, a stream of "Freon-12" in the liquid phase passes through the cell, the operator presses a button and reads directly from the scale on the instrument the amount of water in the sample.

New officers of the Cleveland Section of the American Society of Refrigerating Engineers pose for post-election photo. Left to right: James H. Downs, Refrigeration Supplies, 2nd vice chairman; Ralph W. Geltz, York Corp., secretary; W. Saul Smith, Johns-Manville Sales Corp., chairman; Stanley R. Guilbert, Reister-Thesmacher Co., treasurer. John L. Frisse, Thermal Products Co., 1st vice chairman, was not present when the picture was taken.

112 SPACES SOLD FOR ALL-INDUSTRY SHOW IN 1948

Strong impetus has been given plans for the Fifth All-Industry Refrigeration and Air Conditioning Exposition in January, 1948, with the announcement that 72 companies already have taken 112 exhibit spaces in the Cleveland Public Auditorium, scene of the event.

These companies are members of the Refrigeration Equipment Manufacturers Association, sponsors of the show. The exposition now has been opened to other manufacturers who had displays in the Fourth All-Industry show in Cleveland in October, 1946. Later, the show will be opened to all companies in the industry.

The 1948 show program was developed in detail at the annual spring conference of REMA in Chicago when E. M. Flannery, new REMA president, disclosed that the new show committee will consist of F. J. Hood, Ansul Chemical Co., chairman; J. A. Strachan, Weatherhead Co., and J. A. Marshall, Wolverine Tube Co.

Many new features will be added to the show in 1948 which will be the first event in the industry's new schedule of national expositions on a biennial basis. Word from other branches of the industry indicate that at least four other associations are planning special meetings in Cleveland during show week, beginning January 26. It also was announced that arrangements are being made for a large-scale, industry-wide banquet at which a nationally-known speaker will appear.

The show itself will continue for four days, Monday through Thursday, Jan. 26 to 29. Regular show hours have been announced as 2 p.m. to 10 p.m. on Monday; noon to 6 p.m. on Tuesday and Wednesday, and 10 a.m. to 4 p.m. on Thursday. This schedule of hours permits ample time for individual association meetings and other activities.

The show committee also revealed that a plan has been completed with Cleveland hotels and the Cleveland Convention and Visitors Bureau for the organization of hotel facilities to provide ample accommodations for show visitors.

TESCO OPENS STORE IN UNION CITY, N. J.

Tesco Distributors, parts and supplies wholesaler of Newark, N. J., has opened another branch store at 1614 Bergenline Ave., Union City, N. J. George Atkins will manage it.

Main office and warehouse of the company at Newark has been enlarged by the addition of 5,000 sq. ft. of space to accommodate an expansion program already under way, Ted Yecies reports.

Tom Phillips has been appointed as dealer relations director of the firm, and Paul Brokely and Vince Borrowdale have been named field men.

REVERE HONORED FOR OLDEST BRAND NAME

Oldest of the brand names honored by Brand Names Foundation at a recent one-day meeting in New York City was "Revere," the name which identifies the products of Revere Copper & Brass, Inc., of New York City and Rome.

This firm was presented with a "Centennial Certificate" citing its unbroken record of public service since it was founded in 1801 by Paul Revere. C. C. Felton, assistant to the chairman of the board, accepted the award for the company.

KOLDAIRE CO. MOVES INTO OWN BUILDING

The new home of Koldaire Refrigeration Co., 1985 Nostrand Ave., Brooklyn, N. Y., has just been completed. An additional 2800 sq. ft. of showroom and storage space has been added to the present building.

This firm will handle a full line of commercial refrigeration equipment for every type of business. In business for over 11 years, this firm maintains one of the largest commercial service companies in the metropolitan area. They are factory representatives of Curtis refrigeration and air conditioning for the Brooklyn and Queens area.

Frank D. Winslow and Joe W. Thiele, of Thiele-Winslow Co., San Antonio Carrier distributor, stand beside the world's first year-around air conditioned bus. For purposes of contrast, the city's historic Alamo was chosen as the background for this picture.

* * *

WEBER IS PACIFIC SERVICE MANAGER

Alfred E. Weber has been appointed national service manager of Pacific Mfg. Co., Cleveland, manufacturer of "packaged" air conditioning units. Mr. Weber has been in the refrigeration field for more than 20 years, and was formerly with Worthington Pump & Machinery Corp. and with Gard-Aire Products Division of Gardner Forster Corp., of which he was chief engineer.

SCATENA HEADS CAL. CONTRACTOR GROUP

James A. Scatena of San Francisco has been elected president of the Refrigeration Contractors' Association of Northern California.

Other officers named were Al Robison, Oakland, vice-president; Nat Silverstone, Oakland, treasurer; L. E. Kreps, Oakland, recording secretary. Zed E. Jones was re-elected as secretary-manager.

Directors chosen were Quigley Watt, Ralph Wetzel, and Ed Tanner, all of San Francisco; E. L. Sattler, Concord; E. R. Eccles, Stockton; R. M. Oeberst, Sacramento; and Douglas T. Robertson, Merced.

NEW OWNERS, NEW NAME

Messick's Refrigerator Service in Kissimmee, Fla., has been purchased by Walter McCarley and Preston M. Steiner, and in the future will do business as Kissimmee Refrigerator Sales & Service.

FIRST YEAR-AROUND CONDITIONED BUSES USE CARRIER UNITS

The first year-around air conditioned city bus in the world has been placed in operation in San Antonio, Tex., according to officials of the San Antonio Transit Co.

This 32-seat ACF-Brill bus is the forerunner of 49 other such vehicles soon to be placed in use by the transit company, and 100 40-passenger buses of the same make which are currently in production. All 150 of these buses will be air conditioned by Carrier Corp.

Air conditioning plant of each bus is powered by a 16-hp gasoline motor which is entirely separate from the 165-hp engine which provides motive power for the bus itself. Cooling is provided by a 5-ton Carrier unit which circulates the cooled air through hundreds of small openings in the ceiling of the bus and through outlets over the seats. Two filters under the rear seat remove dust and odors from the air before cooling and circulation.

The air conditioning system includes a set of fans for even and forced distribution of the cool air in summer. In winter, the same fans circulate warm air from under-the-floor hot water heaters through ducts along the floor to registers beneath the seats. Both winter and summer temperatures are controlled by thermostat. It is reported that the cooling equipment will bring temperatures inside the bus at least 10 degrees below outside temperatures on even the hottest days.

MASTERFREEZE DROPS PRICES, UPS OUTPUT

Reductions up to 34% in the price of its home freezers have been announced by Masterfreeze Corp., coincident with the announcement of plans for broad expansion of the company's operations.

Price of the 19-cu. ft. Masterfreeze model was dropped $190, from $625 to $435. Price of the 14-cu. ft. unit was slashed from $560 to $365, a $195 cut.

Commenting on the reduction, E. F. Anderson, company president, said, "This is a drastic cut, but drastic action is required to stop inflation and bring back the buying power of the consumer's dollar. We hope other businesses will do the same."

* * *

WILSON CUTS PRICES ON COOLING LINE

Price reductions all along the line have been announced by Wilson Cabinet Co., Inc., on its milk coolers, farm freezers, and walk-in commercial refrigeration equipment.

Consumer prices of farm milk coolers have been reduced from $13.50 to $32. On four of the company's most popular farm freezer models, retail prices have been slashed from $26.75 to $58.

* * *

BUFFALO FORGE TO HOLD PRICE LINE

A firm price policy on all lines of air conditioning equipment, fans, blowers, power plant equipment, unit heaters and pumps manufactured by Buffalo Forge Co. and its subsidiary, Buffalo Pumps, Inc. has been put into effect according to Edgar F. Wendt, the company's president.

Mr. Wendt said that the company had decided that "the best interests of the nation will be served by a return to normal pricing procedure." He added that it was the company's hope that "spiralling of prices will not continue."

* * *

LOUDON FREEZERS CUT $25 TO $100

Loudon Mfg. Co., Minneapolis, announced price reductions on its home freezer and farm freezer units of from $25 to $100, effective May 1.

PRICES ON AMCOIL PRODUCTS REDUCED

American Coils Co., in revised price lists as of April 15 for both refrigeration and air conditioning equipment has reduced prices throughout its line. Top price reduction is $73 on one model. According to T. W. Binder, president, the Amcoil reductions are in compliance with President Truman's request to manufacturers for lower prices to combat inflationary trends.

H. A. Thibault, vice president in charge of sales, announces that the new price lists were put into effect immediately and have been distributed throughout the trade.

* * *

TRANE SETS FIRM PRICE POLICY

The Trane Co., La Crosse, Wis. manufacturer of heating, cooling and air conditioning products, has announced that all orders received for early delivery will be accepted at firm prices. All escalator clauses, under which orders were billed at prices in effect at time of shipment and which have been in effect until now have been removed.

* * *

G-E RAISES ITS PRICES ABOUT 7%

General Electric Co. has raised the prices of four household refrigerators, a home freezer, and other major appliances by an average of about 7%, and an announcement by president Charles E. Wilson said the raises were made necessary by wage increases of about 15 cents an hour recently granted to 125,000 employees.

Price of the G-E 6 cu. ft. refrigerator was raised $10; three 8-foot models went up $25, $30 and $40. The company's 8 cu. ft. home freezer went up $30.

* * *

SCHAEFER FREEZERS CUT $40 TO $140

Harold L. Schaefer, president of Schaefer, Inc., Minneapolis, has announced price reductions of from $40 to $140 per unit on all models of the "Pakaway" freezer which the company makes.

SAN ANTONIO GROUP JOINS N.C.R.S.A.

Members of the Commercial Refrigeration Association of San Antonio, Tex., organized some months ago, have joined the National Commercial Refrigerator Sales Association, reports George B. Herman, NCRSA president.

Glenn Chapin of Texas Refrigeration & Equipment Co. heads the San Antonio group, which numbers 10 members. W. J. Harding of Alamo Equipment Co. is acting as secretary-treasurer.

Directors, in addition to the officers, are Eugene Bohne of Friedrich Sales, A. J. Levinston of General Hotel Supply Co. and H. H. Piehl of City Carbonic Co.

CENTURY ELECTRIC PROFITS TRIPLE

Century Electric Co. reports a net profit of $1,198,453 for the year ended Dec. 31, 1946, compared with a profit of only $343,308 for the previous year. Sales for the two years showed little discrepancy, with a total of $14,717,812 for 1946 and $14,481,127 for 1945.

NEW REWA MEMBER

Refrigeration Parts & Supply Co., Albuquerque, N. M., has been elected to regional membership in Region #8 of the Refrigeration Equipment Wholesalers Association.

ACME FIELD MEN MEET AT FACTORY

First general meeting of all Acme Industries, Inc., representatives since 1940 was held as a three day session in Jackson, Mich., April 10, 11 and 12. Plans for new designs of products, distribution problems and general expansion to meet the increased demands of the industry were topics of discussion.

Morning and afternoon sessions were held, with a banquet at Hotel Hayes.

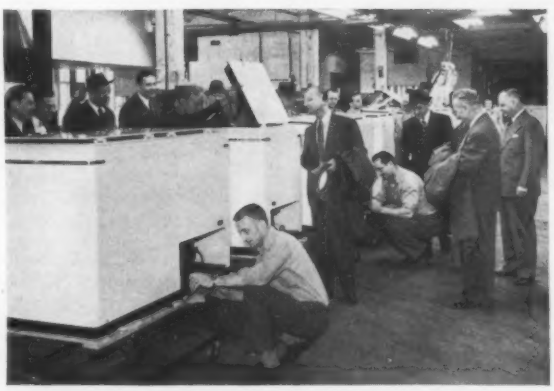
Representatives attending included: W. E. Lloyd, Chicago; J. W. Snyder, Cincinnati; J. M. Craun, Cleveland; R. G. Dawley, Columbus; G. G. Schultz, Dayton; A. W. Barber, Des Moines; O. K. McCullough, Kansas City; R. F. McAndrews, Louisville; G. B. Filbert, New York; J. Barton Harry, Philadelphia; Glen Moore Comstock, Pittsburgh; H. C. Schmidt, Richmond; E. R. Magnus, St. Louis; A. Stuart Mitchell, Washington.

NEW HEADQUARTERS OPENED BY RECO

Refrigeration Engineering Corp. announces the opening of new sales display rooms and general offices at 2024 Market St., Philadelphia. The firm manufactures and distributes commercial refrigeration equipment of all types.

Warehousing activities continue to be centered in Camden and coolers are manufactured at Huntingdon and Camden.

DISTRIBUTORS LOOK 'EM OVER



Distributors of the Whiting home freezer watch production line operations in the Cleveland plant where Whiting units are manufactured. A tour of the plant was held just prior to the company's second annual national distributors' meeting.

WHAT WILL YOUR FUTURE SALES BE IF YOU HAVE TO DEPEND UPON CASH CUSTOMERS? HOW MANY SALES WILL YOU LOSE IF YOU CAN'T OFFER THE TIME-PAYMENT BUYERS A FINANCING PLAN THAT WILL OUT MATCH ANY COMPETITIVE PROPOSITION? IF THESE QUESTIONS STRIKE YOU SERIOUSLY . . . AS THEY SHOULD . . . MAKE IT YOUR IMMEDIATE CONCERN TO FIND OUT ALL ABOUT COMMERCIAL CREDIT FINANCING PLANS FOR THE REFRIGERATION INDUSTRY. POINT-BY-POINT COMPARISON WILL PROVE NO OTHER PLAN GIVES YOU SUCH ADVANTAGES.

COMMERCIAL CREDIT CORPORATION

MORE THAN 300 OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

GUN COOLERS

● First as usual, Peerless conceived, created and now further improves the Gun Cooler line! Here is refrigeration as easy to install as hanging a clock. All engineering is done at the factory! Revolutionary, proved successful in thousands of installations, it reverses operation of conventional blower-type units, performs in upside-down fashion! Warm air is drawn into the grill at top of cooler, pours gently out the bottom chilled to the proper degree, absorbs heat from the stored products and rises to be re-chilled by the Gun Cooler. A sound, effective cooling cycle!

Peerless ANNOUNCES NEW MODELS!

The Famous PEERLESS GUN COOLERS and Large UNIT COOLERS with Flash Tube Fin Coils!

● Literally champions! In smart styling, advanced design, and because they have an air-tight record for superior cooling at minimum operating cost. Peerless Unit Coolers never let their users down! Now more than ever, these coolers substantiate their reputation for "More Refrigeration per Dollar." New models, new improvements, everything which contributes to utter satisfaction is included in their make-up—beauty, compactness, unfailing mechanical performance! Attractive casings are heavy gauge, highly polished aluminum. In these units the basic Peerless policy stands out clearly—to produce low cost equipment by engineering developments, not by cutting corners! No sacrifice has been made in construction, materials or workmanship —nothing spared to make Peerless Unit Coolers the champions of their class.

● For superior performance specify all these PEERLESS products: Flash Plates, Flash Coolers, Unit Coolers, Ice Cube Makers, Fin Coils, Off Center Coils, Expansion Valves and Capacity Boosters. Write for details.

LARGE CAPACITY UNIT COOLERS

● Designed especially for installations requiring large refrigeration capacity in a minimum of space, these models are made long and narrow. They fit closely to the refrigerator ceiling, save storage space and reduce possibility of air being blown directly on the stored product. A typical Peerless product in attractive styling and painstaking workmanship.

SOLD THROUGH LEADING REFRIGERATION SUPPLY WHOLESALERS

PEERLESS of AMERICA, Inc.

General Sales Offices 2901 Lawrence Ave. ● Chicago 25, Illinois, U. S. A.

CONTRACTORS
News • Activities • Plans

While *The Refrigeration Industry* is *not* the official publication of the National Association of Refrigeration Contractors, the Editors assign this space each month to the association. The information below is furnished, for the most part, by the offices of the association and its local affiliates.

Survey Shows NARC Firms Do $160 Million Annual Business

A $160,000,000 gross annual volume of business is indicated for members of the National Association of Refrigeration Contractors, based upon a representative sample of its membership, covering members in the largest as well as the smallest cities, and firms with an annual volume ranging from nearly two million dollars down to five thousand.

This volume comprises sale of equipment, installation jobs, and maintenance and repairs. The latter makes up about fifteen per cent of the total, and the other two classifications are about equal.

The kind of business done by the firms reporting is shown by the following figures, which also indicate the diversified nature of the business and the extent to which equipment is sold in the four classifications.

Kind of Business

On Commercial Refrigeration, 93% install and service, 95% sell equipment.

On Industrial Refrigeration, 74% install and service, 72% sell equipment.

On Domestic Refrigeration, 47% install and service, 35% sell equipment.

On Air Conditioning, 75% install and service, 71% sell equipment.

The ratio of total overhead and operating expenses to gross dollar sales volume ranged generally between 20% and 30% with the average being about 25%.

Employment Figures

A total employment of 6930 skilled mechanics for NARC members is indicated by the data returned.

31% of the firms employ union men.

The survey also brought in figures on wage rates for mechanics and the pricing of labor work on jobs, but NARC directors felt that this information should be restricted to the association members, for the time being.

This was NARC's initial effort to get some needed statistical information about the business, that could be used as a guide or measuring stick for members to size up their own operations with others.

The number of members returning questionnaires was highly gratifying; and, based upon that, another survey will be made soon to get additional information, including present wage rates.

CONNOR HEADS OHIO CONTRACTOR GROUP

R. A. Connor, Buckeye Refrigeration Co., Columbus, was elected president of the Central Ohio Association of Refrigeration Contractors at the annual meeting held recently.

R. J. Creamer, Commercial Refrigeration Co., was elected vice president, and W. H. Boye, United Refrigeration Service, was re-elected secretary-treasurer. Both are Columbus men.

The association is affiliated with the National Association of Refrigeration Contractors.

ARIZONA CONTRACTORS ELECT NEW OFFICERS

The former Arizona Refrigeration Association has changed its name to Arizona Refrigeration Contractors Association, and has adopted a new Constitution and By-Laws, prepared and recommended by the National Association of Refrigeration Contractors, with which the Arizona association is affiliated.

Headquarters are in Phoenix, and the present membership comprises 25 refrigeration contractors of all sizes and both union and non-union.

Officers elected at the Annual Meeting are: President, G. W. Lance,

MAGIC IN A SMALL BOTTLE
FREEZE-UPS ELIMINATED RIGHT AWAY!
ANSUL ICE-X
ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems . . . The dependable liquid anti-freeze.
"ONE SERVICE MAN TELLS ANOTHER - IT'S GREAT"
ORDER FROM YOUR JOBBER OR—
EXCLUSIVE NATIONAL DISTRIBUTOR
THE HARRY ALTER CO. 1728 S. MICHIGAN AVE. CHICAGO 16, ILLINOIS
JOBBERS: WRITE FOR SPECIAL PROPOSITION!

A GOOD REPUTATION HAS TO BE EARNED

*ONE TENTH OF .001

No. 3 of a series highlighting the designing and manufacturing of "America's Most Modern Heavy Duty Condensing Units."

Lehigh BLU-COLD COMMERCIAL REFRIGERATION

Engineering

Production

Management

*First came metallurgical control providing perfect castings. Second — creative engineering, and designing — drawing on Lehigh's deep reservoir of experience. Then to the machine shops where skilled hands operating costly and intricate tools fashion the metal to BLU-COLD specifications. Here many critical moving parts are machined to a tolerance of one tenth of .001. Here are long batteries of the most modern micromatic hones, centerless grinders, Blanchard grinders, precision boring machines and other tools essential to the maintenance of BLU-COLD quality manufacturing standards. The net result is shown in BLU-COLD'S amazingly fine field record so freely attested by BLU-COLD users in all commercial fields.

Now available in ¼ H. P. to 1 H. P. Full line to include UP TO 5 H. P.

Lehigh

Manufacturing Company

Plant: Lancaster, Penna.

Ace-Lance & O'Hara Refrigeration Co.; vice president, Burke Patterson, Climate Control Co.; secretary-treasurer, Kenneth Nash, Aircold Refrigeration Service; and sergeant-at-arms, Harlan Diehl, Commercial Refrigeration Service.

The directors comprise the officers and Roy L. Perry, Roy L Perry Dairy Supply; E. McLaughlin, Arizona Engineering; Bill Houser, Karlson Machine Works; Frank Samuels, Frank Samuels Dist. Co.; and C. M. Tally, Tally Refrigeration Service.

The association covers the entire state of Arizona, but at present all the officers and directors are located in Phoenix.

The association is now busily working on a state refrigeration code, which will include a licensing provision along with bonding, permits and inspections.

OREGON CONTRACTORS FORM STATE GROUP

A new Refrigeration Contractors Association of Oregon has been formed and affiliated with the National Association of Refrigeration Contractors. Headquarters are in Portland, 424 Failing Bldg., and the entire state will be included in the area served by the organization.

James Freeman is president, C. J. Bell vice president, and Ranson D. Meinke, paid secretary. On the board of directors, with the officers, are Anton Broms, E. B. Morris and F. A. Rigby.

A state-wide dinner meeting will be held in Portland June 12, to which all Oregon refrigeration contractors are invited.

DULUTH-SUPERIOR GROUP AFFILIATES WITH NARC

The Refrigeration Contractors Association, Duluth-Superior Area, has just been formed, with Ken Draver, Superior Refrigeration Service, Superior, Wis., as president.

Other officers elected are: Orval Hursh, Hursh Refrigeration & Appliance, Superior, vice president; Roy Hammerstedt, General Appliance Co., Duluth, Minn., secretary-treasurer; and Ted Luck, Gartner Refrigeration Co., Duluth, sergeant-at-arms.

The board of directors comprise

Continued on page 64

SMART CLOTHES

GOOD HARDWARE on a refrigerator is much like good clothes on a man—smartly styled, correctly fitted, well made to give satisfying service.

Arcade makes "good clothes" for commercial units—a complete line.

Catalog and prices on request.

ARCADE

MANUFACTURING DIVISION
ROCKWELL MANUFACTURING COMPANY
FREEPORT, ILLINOIS

FOR *Faster Service* AND
MORE PROFITS
YOU NEED BOTH THESE HANDY KITS

Genuine WAGNER
Fast Moving Electric Motor Repair Parts
AVAILABLE NOW!

M-1—For "one-trip" jobs . . . as useful to the service man as his pliers and screwdriver, and almost as easy to carry.

The M-1 kit box is of heavy fiber, contains a variety of 61 of the motor repair parts most commonly needed for domestic appliance type motors up to and including ½ horsepower.

M-2—For your shop . . . a convenient and economical way to get wide coverage of repair parts.

The M-2 kit box is of sheet steel, contains a variety of more than 680 fast moving parts for domestic and industrial type repulsion-start induction brush-lifting and capacitor-start motors up to and including 3 horsepower.

M-1 and M-2 kits are available now at our 25 branches and 325 authorized service stations. Or if more convenient, order your kits by using the coupon below.

WAGNER ELECTRIC CORPORATION
6442 Plymouth Avenue, Saint Louis 14, Mo., U. S. A.

Date.....

Please ship .....(Quantity) Motor Parts Assortment M-1 ($13.05 net each) $.....
Shipping Weight 3 pounds
F. O. B. Point of Shipment .....(Quantity) Motor Parts Assortment M-2 ($169.33 net each) .....
Shipping Weight 46 pounds

Order No.....

Total $.....

Company.....

Address.....

City.....Zone....State.....

M47-21

Wagner WE Electric

the officers and Wyman Collier, Town & Country Mart; E. Dahlin, Baxter Co.; Fred Mosher, Fred Mosher Co.; and E. Muccilli, Duluth Fixture Co.,—all of Duluth.

It becomes the 21st local association to affiliate with the National Association of Refrigeration Contractors; and adopted the model constitution and by-laws worked out and suggested by NARC for local groups.

It starts with a charter membership of 12, which is considered excellent for the 140,000 population area it will serve.

CONTRACTORS IN TAMPA AREA HOLD MEETING

Twenty refrigeration contractors of the Tampa and St. Petersburg, Fla. area met recently in Tampa with Warren W. Farr, president of National Association of Refrigeration Contractors, to discuss cooperation through an area association affiliated with NARC. The meeting was arranged and presided over by H. B. Adams, Tampa refrigeration contractor.

MORE CONTRACTOR NEWS ON PAGE 88

DAYTON CONTRACTORS PLAN CITY CODE

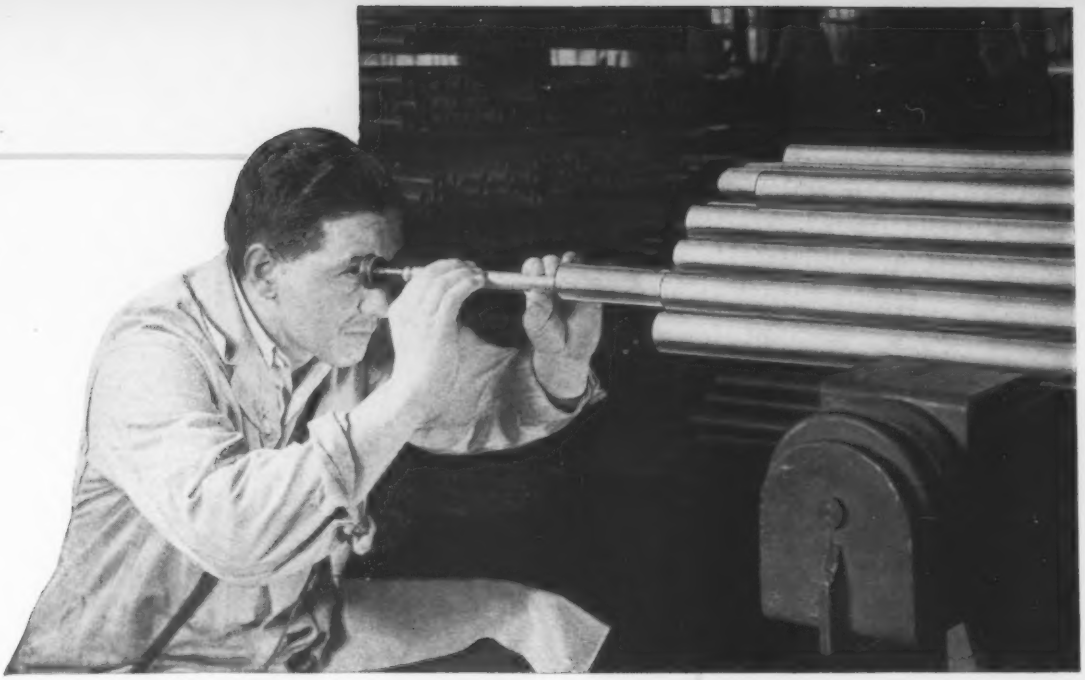
Sixty Dayton refrigeration contractors, service engineers and mechanics met recently to initiate action on a refrigeration code for Dayton, with a provision for licensing, permits and inspections.

The meeting was held at the Jamison Engineering Co., and was presided over by M. M. Jamison.

A special Code Committee was selected by those present, with L. O. Warner, Refrigeration Service Shop, Inc., as chairman.

The National Association of Refrigeration Contractors was represented by Gerald Weston, executive vice president, of Cleveland, and Ed S. Wright, first vice president, of Youngstown.

A safety code, with licensing of both refrigeration contractors and mechanics, and fair, reasonable, and impartial in all respects, was advocated by those present.



We do this in self-defense

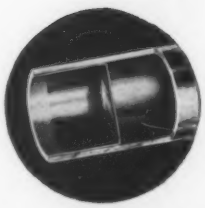
...but see how it works to your advantage

For many years we've manufactured small diameter tubes of the highest accuracy commercially obtainable.

One of the reasons for this is the consistent use of the bore telescope on our redraw tube stock . . . for a *small* defect in a large tube would mean a *large* defect in a small tube.

Since a tube with an imperfect bore could not escape our final tests and inspection, it would be rejected and scrapped . . . hence, we have a mighty good reason for ferreting out any possible imperfection right at the start. It saves *both* of us time and money—and assures a superior product.

THE AMERICAN BRASS COMPANY — FRENCH SMALL TUBE BRANCH
Subsidiary of Anaconda Copper Mining Company
General Offices: Waterbury 88, Connecticut
In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.* 47412



Precision-made tubes in Copper, Brass, Bronze and Copper-Nickel Alloys; in sizes from .015" O.D. to 1" O.D. with wall thickness down to .004"; round, square, or irregularly shaped; in coils, straight lengths or special forms. Bourdon tubes, thermal expansion bulbs. And, of course, Anaconda Dehydrated Copper Refrigeration Tubes with the famous Cup Seal*.

* Patent Applied For

ANACONDA
from mine to consumer

Anaconda Precision-Made Tubes

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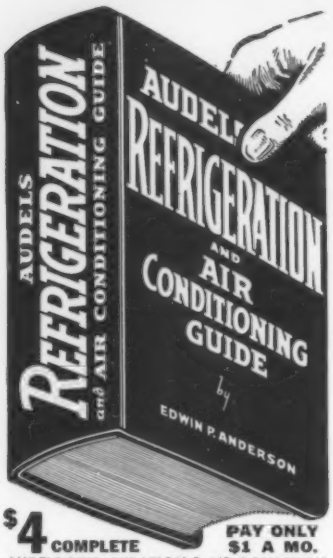

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- ☐ ELECTRIC LIBRARY, 12 vol., 7000 Pgs., $1.50 vol.
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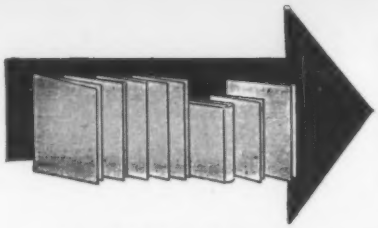

Useful Literature

The publications listed below are available to readers without charge. Simply list on the postcard provided in this issue the numbers of the items you wish to receive, and send it to THE REFRIGERATION INDUSTRY, 1240 Ontario Street, Cleveland 13, Ohio. Your requests will then be forwarded directly to the companies concerned.

157—Ice Makers . . . A 16-page bulletin (TI-2) describing and illustrating the operation of the automatic "Tube-Ice" machines manufactured by Henry Vogt Machine Co., and their applications in such places as milk plants, packing plants, cafeterias, hotels, and breweries.

158—Diesel Engines . . . An 18-page catalog illustrating and describing the complete line of Witte Diesel engines and "Dieselectric" plants designed for providing electric light and power for refrigeration requirements. Available from Witte Engine Works.

159—Drier-Filters . . . Specifications and construction details of the heavy-duty "Cross-Flo" combination drier-filters are the subject of the illustrated 4-page bulletin (R1) available from Remco, Inc.

160—Pipe Tape . . . Six illustrated steps in the application of "Mystik Self-Stik Dri-Pipe" insulation material designed to prevent dripping of condensate from cold water pipes are featured in a pocket-size folder available from Mystik Adhesive Products.

161—Accessories . . . A 12-page catalog (No. 472) illustrating, describing, and listing specifications of the complete line of refrigeration accessories produced by Wabash Mfg. Co.

162—Anti-Frost Compound . . . Nature of "Thors" anti-frost compound and its use on refrigerator coils and plates and freezer doors is outlined in a folder available from Stanco, Inc.

163—Controls . . . A full-page diagram in color of a typical two-temperature refrigeration system using the valves, strainers, and other products of General Controls Co. is a feature of that company's catalog (No. 200).

164—Freezer Paper . . . Six illustrated tips on wrapping meats for freezing feature the specification sheet issued by Kalamazoo Vegetable Parchment Co. on its retail-size rolls of freezer paper for home freezer owners and locker plant customers.

165—Water Valves . . . A pocket-size folder illustrating and listing the features of a line of water valves for use with sulphur, methyl, and Freon condensing units. Available from Art Valve Co.

166—Hand Trucks . . . Detailed information, including prices, on the line of hand trucks manufactured by Handees Co. is contained in a three-color broadside available from that company.

167—Walk-Ins . . . A folder describing the "Miracool" line of all-steel walk-in refrigerators and other products. Available from Cleveland Refrigerator Co.

A limited quantity of new full-line catalogs, with a separate section for each product and containing an outline of the company's newly developed science of "Flexonics", has been made available by Chicago Metal Hose Corp., 1315 S. Third Ave., Maywood, Ill., and will be sent to individuals requesting it upon company letterhead.

ROGERS
Dry Beverage COOLER

39 in. high
30 in. wide
6, 8 or 10 feet long

Beautiful stainless steel and polished aluminum outside with polished aluminum interior. Heavy duty fin-type coils give fast cooling and less frosting. Rugged construction, first quality materials. Stainless steel lids slide away or lift out. 8-inch utility shelf. Removable dividers inside. Toe space under edges.

Complete Line of Refrigeration

Immediate Delivery | ***Dealers Wanted***

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Str-r-rike!

1—2—3 . . . you'll retire *every* repair job that comes your way, when you use *genuine* Kelvinator-made parts, available now through 50 convenient Kelvinator parts depots.

That's because *every* Kelvinator part is made with the same care that has distinguished all Kelvinator products through 30 years in refrigeration—care that has made *Kelvinator* the accepted standard for refrigeration *quality.*

DIVISION OF NASH-KELVINATOR CORP., DETROIT

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CONDENSING UNITS OPEN AND SEALED

NEW IMPERIAL TORPEDO DRIER

. . offers 4 important improvements including MICRONIC FILTER

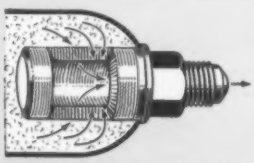
Imperial leads again with an improved drier-filter design providing important advances. They make the Imperial Torpedo more than ever your best weapon in the war on moisture:

1. New micronic filtering element is 3 times finer than ordinary screens . . . has more filtering area for longer operation without cleaning . . . removes foreign matter, prevents passing of tiniest particles of Silica Gel.
2. Two wrench holds make refilling very easy.
3. Large sizes have female flare threads fitted with male unions permitting size interchangeability.
4. Capacities rated in accordance with REMA recommendations.

Has all the other important advantages described at right. Light weight eliminates strains in line in installation. Packed with Silica Gel under controlled atmospheric conditions.

Also a line of non-refillable driers in sizes up to ¾ hp.

THE IMPERIAL BRASS MFG. CO.
536 S. Racine Ave., Chicago 7, Ill.



Micronic Filtering Element

Made of phenolic-resin-impregnated cellulose, polymerized to make it impervious to refrigerants. The refrigerant passing through the filter deposits foreign matter on the outer surfaces. Easily and quickly cleaned.

The TORPEDO
DRIER
IN
OUT
Micronic filtering element.
Brazed—no soft solder joint that might loosen.
One piece, copper shell provides greater strength. Fewer joints — less chance for leakage.
Copper and brass construction.
Silica Gel content and horsepower balanced.
Finger-type, fine mesh, monel metal screen of welded construction.
Easy to refill. Note generous surfaces for wrench hold on both fitting and shell. No bolts to unscrew and no flanges or springs to remove.

IMPERIAL

Fittings • Valves • Filters • Driers • Floats • Charging Lines • Tools for cutting, flaring, bending, coiling, pinch-off, swedging

For further information on any of these products, simply list the key number at the head of each item on the special post card enclosed with this issue.

Self-Service Case • • • • P-79

Product: Open type, self-service dairy and meat case.

Manufacturer: Tyler Fixture Corp., Niles, Mich.

Features: Built in 12 and 8-foot sizes. Product display reflected in

mirrors. Fluorescent lighting. Rear loading. White porcelain front and top, mezzanine shelf, rear and end liners. Large fin coil with proper circulation. False canopy top housing upper mirror permits easy access to electrical parts. Front panel removable to reach drain and other connections. Case designed for pressurestat hookup and defrosting cycle operation.

Defrost Control • • • • P-80

Product: "Auto-Defrost", an electronic circuit for automatically controlling water defrosting of refrigeration coils.

Manufacturer: Bush Mfg. Co., Hartford, Conn.

Features: Employs a single 6SH7 tube to trigger a relay that initiates, automatically, all of the functions required for defrosting refrigerator coils with ordinary tap water. Connects in series with the fan motor. Functions only when an accumulation of frost on the coil causes the fan motor to draw more current. By means of simple relay circuits, a single unit can control several refrigeration coils.

Tube Pincher • • • • • P-81

Product: "Decker Pinchrite" tool for pinching off tubing.

Manufacturer: Auto-Ice Co., Santa Monica, Calif.

Features: Gets in close places. Eliminates hazards of ordinary pinch-offs by holding on each side of the pinch. Automatically aligns itself and opens with less injury to tubing. Price: $3.00.

Home Freezer • • • • • P-82

Product: 8-cu. ft. chest type home freezer.

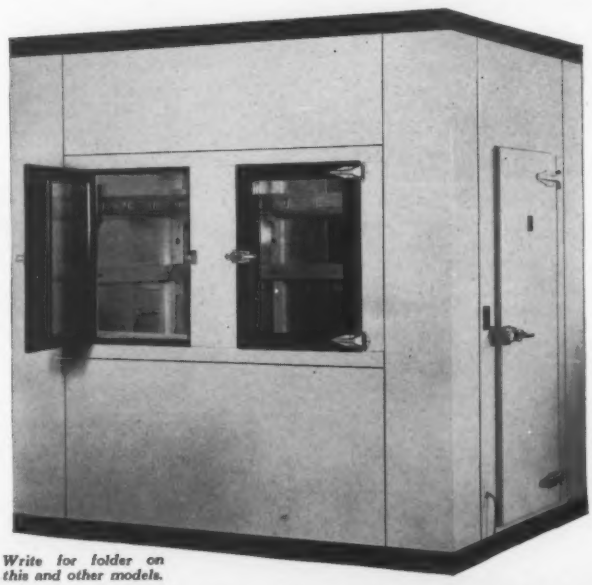
Manufacturer: General Electric Co, Bridgeport, Conn.

Features: A light in the back of the counter-balanced lid automatically turns on when the lid is raised. Hold 280 pounds of food. Freezing-storage space is only 20 inches deep,

placing all packages within easy reach. To further facilitate handling foods, the freezer is equipped with four wire baskets, one of which is fitted with a small thermometer. Two shelves built into the left side of

Consistent Quality Products

MIRACOOL *All Steel* WALK-INS



Write for folder on this and other models.

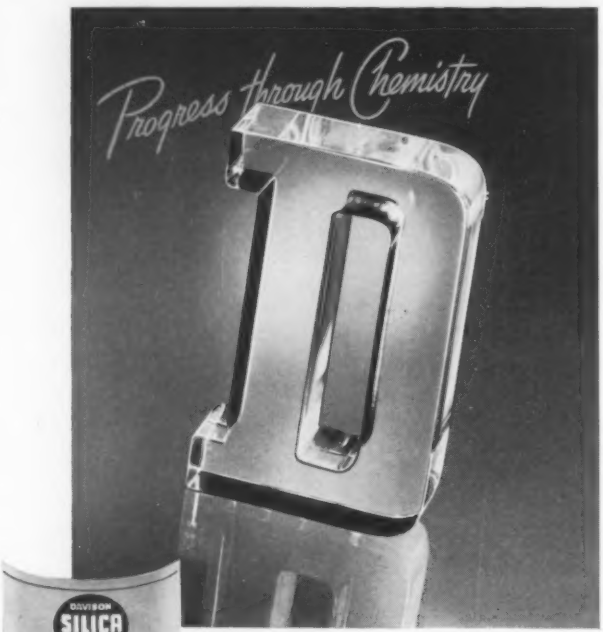
THE CLEVELAND REFRIGERATOR CO.

2901 EAST 65TH ST. CLEVELAND 4, OHIO

A PROFITABLE new sales operation, merchandising of eye-appealing whipped cream cakes, has been made possible in the bakery at Hillman's Washington Store, Chicago, through installation of a stainless-steel display refrigerator which keeps the cakes under 35 F refrigeration in full view of customers.

The refrigerator was custom-built for the purpose, according to Della Doroh, head of the bakery, and will accommodate 40 to 50 whipped cream cakes at once. It consists of four stainless steel rod shelves behind a slanting double plate-glass front, the entire box enclosed in shining stainless steel. A "blast" cooling unit circulates 400 fpm of chilled air through the interior, from a 1 hp compressor and coil unit, sufficient to keep the temperature between 35 and 40 F, depending on the load.

WHAT THE DAVISON "D" MEANS



IN THE REFRIGERATION FIELD

"Look for the Can with the Blue Label"

It's natural to answer, "DRYNESS." Most service engineers recognize it as the symbol of "DEPENDABILITY."

But actually, it stands for the integrity of the Davison name. *A name which appears on the familiar blue label . . .* the standard drying agent . . . DAVISON REFRIGERATION GRADE SILICA GEL. Ask your jobber for it in bulk or in factory-charged dehydrator cartridges!

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON SILICA GEL:
CANADIAN INDUSTRIES LIMITED, General Chemicals Division

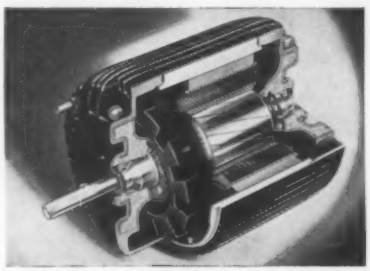
the chest provide for the freezing of 35 pounds of food at a time. A warning light, which burns continuously, goes off when the current supply is interrupted or the temperature in the freezer rises.

Micromotor • • • • • P-83

Product: New 1/20 hp. 4-pole shaded pole, totally enclosed, ac motor, designed for continuous fan duty at 1500 rpm.

Manufacturer: Redmond Co., Inc., Owosso, Mich.

Features: 2 sq. in. of bearing surfaces with individually fitted bear-



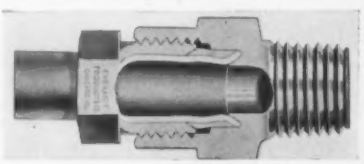
ings, spaced 5 inches overall and 6 cu. in. total volume in oil reservoirs. Circulating lubrication is said to permit continuous operation in any position for unlimited periods. Lubricated silent thrust washers; patented flush-weld precision skewed rotor; humidity and oil resistant windings; controlled end play; sturdy die cast machined frame; fin-line functional styling with 198 sq. in. of cooling surface and internal air circulation.

Self-Sealing Fittings • • • P-84

Product: "Everseal" self-flaring coupling for both new and replacement use.

Manufacturer: Everhot Products Co., Chicago.

Features: Complete two-piece unit consisting of fitting and nut only. End of tube is forced into annular recess of fitting by "sleeve" end of



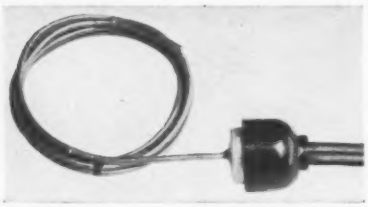
nut and is extruded into perfect flare by tightening nut. Combines simplicity of compression fittings with strength of flare type. Designed to

permit assembly and disassembly as often as desired, without affecting either tubing or fitting. Leak proof, and will withstand pressures up to 8,600 psi. Stock of only 10 shapes in various standard sizes takes the place of a full line of standard compression, S.A.E., flared, inverted flare, and other tube connector fittings.

Alarm Switch • • • • • P-85

Product: Low voltage electrical alarm switch for use with commercial and home freezers.

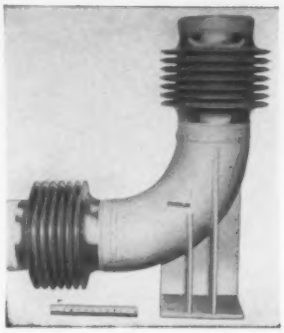
Manufacturer: Cutler-Hammer, Inc., Milwaukee.



Features: Installed with either a bell, light, or buzzer alarm device, the switch is designed to function as soon as the temperature in the freezer rises to a predetermined danger point. Contains a complete thermostatic element together with the contact mechanism, although the entire device is no larger than an acorn.

Elbow Joint • • • • • P-86

Product: Packless anchor base elbow expansion joint.



Manufacturer: MagniLastic Div., Cook Electric Co., Chicago

Features: Available in all standard pipe sizes and in a choice of materials. In unit illustrated, each bellows allows 1½-inch total movement, with 30-inch overall free length.

Continued on page 73

ACE ICE CREAM CABINET CORPORATION
ACE
NEW YORK 60, N.Y.

Manufacturers of

ICE CREAM CABINETS

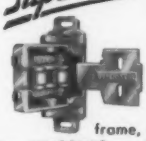
FARM and HOME FREEZERS

FROZEN FOOD DISPLAY CABINETS

SODA FOUNTAINS and BOB TAILS

"Butcher Boy" Since 1885
COLD STORAGE DOORS
with

Super-Seal FASTENERS



"Super Seal" Fasteners maintain a 100% tight seal between the door gaskets and frame, thereby preventing WARPING and DOOR ICING.

"FINGERTIP" DOOR OPENERS

Minimize the efforts of opening heavy cold storage doors by application of the laws of "leverage"

BUTCHER BOY COLD STORAGE DOOR CO.
170-180 N. SANGAMON ST. CHICAGO 7, ILL. U.S.A.

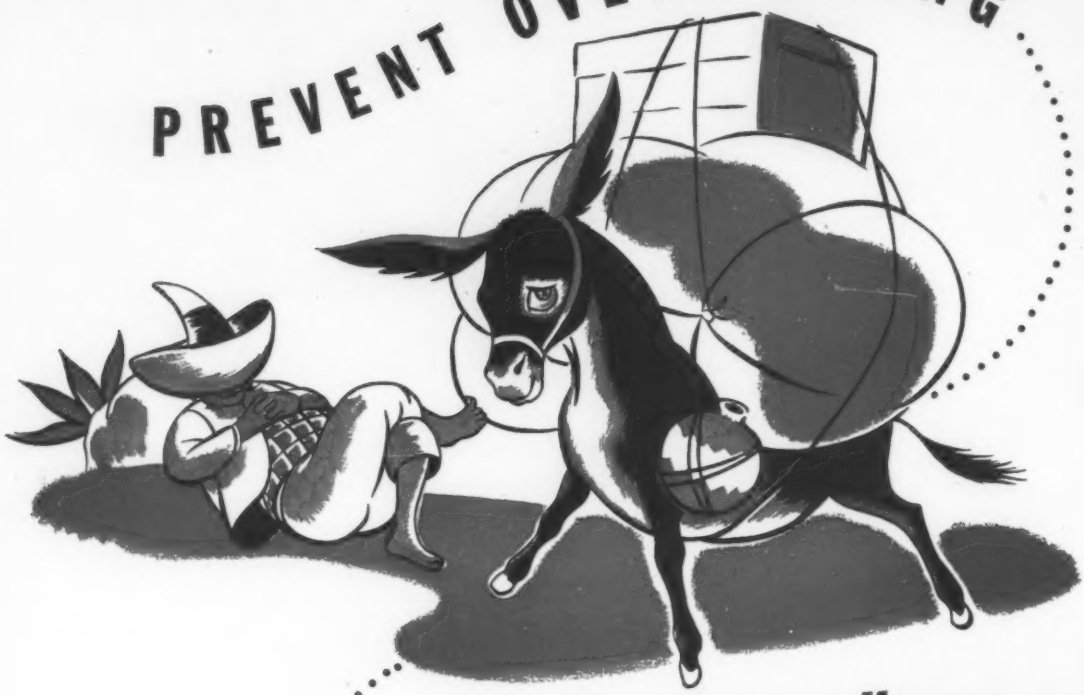
WRITE TODAY FOR FREE INFORMATION

NAME _____

ADDRESS _____

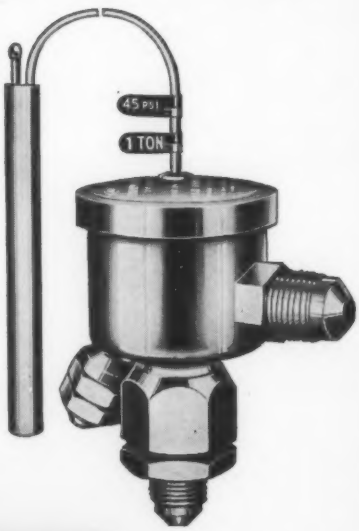
CITY _____ STATE _____

PREVENT OVERLOADING



. . . during "pull-down" period

with the Alco THERMO-LIMIT Valve



Now it's easy to protect motor and compressor against overloading. Operation of the Alco THERMO-LIMIT Valve is automatically limited to five predetermined suction pressure settings: 10, 15, 30, 45, or 55 pounds.

Quickly interchangeable cartridges do the trick. And the THERMO-LIMIT is liquid-charged, so you can install it in any location or position.

Available at your wholesaler's for smaller capacity commercial refrigeration. Ask for our Bulletin 152.

ALCO

ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves; Float Switches.

Bellows is fabricated from stainless steel and the "L" used is standard weight 10-inch carbon steel pipe.

Frozen Food Case • • • P-87

Product: Double duty frozen food dispenser for retail markets.

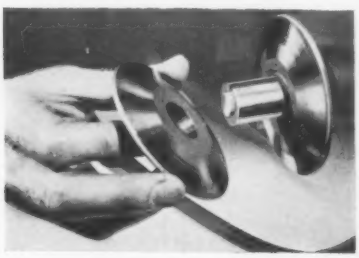
Manufacturer: Spir-O-Freez Co., Staten Island, N. Y.

Features: Open trough design with gravity-feed display chutes which keep packages perfectly displayed without any attention from store owner. Full length mirror and fluorescent lights. Set-back base and double gasketed doors. Enamel and stainless steel construction, with heavy duty hardware.

Adjustable Pulley • • • P-88

Product: "Spiralok" fixed adjustable, variable pitch. V-belt pulley.

Manufacturer: Scientiae Corp., Dayton, Ohio.



Features: Locks onto shaft by means of a spiral wedging action. No set screws are used; no threads or keyways are required on the shaft. Pulley is in rigid alignment when locked on shaft, and an infinite number of adjustments may be easily made. Pulley will drive in either direction of rotation. Particularly adapted for use with air conditioning, refrigerating and ventilating equipment.

Beverage Coolers • • • P-89

Product: New line of dry beverage coolers of both self-contained and remote types.

Manufacturer: Frigidaire Div., General Motors Corp., Dayton, Ohio.

Features: Two, three, and four-lid types, with storage capacities ranging from 360 to 740 12-ounce bottles. Adjustable compartment dividers insure accomodation of any sized bottle. Utility shelf for chilling glasses, other beverages, and sandwich material. Steel construction finished in bronze. Fan at bottom of cabinet forces cool air throughout storage compartment, first chilling bottles at top. A baffle prevents escape of cooled air through lid openings. Only electrical plug-in necessary.

Heat Exchanger • • • • P-90

Product: "Liquid-Fin" heat exchanger.

Manufacturer: Remco, Inc., Pittsburgh, Pa.

Features: Liquid refrigerant flows at line velocity inside the spiral corrugations in direct or "prime" heat exchange relationship with the colder, higher velocity suction gases which travel, counter flow, over, around and into the corrugations. Straight-through design of liquid and suction connections, plus 125% minimum flow areas, precludes possibility of pressure drop in either liquid or suction circuit. Soft annealed "o.d. tube"

WATCH FOR THIS DISPLAY!

You will find this attractive display of THAWZONE and TRACE, illustrated here, on the counters of leading refrigeration equipment wholesalers throughout the country. Let it remind you that:

1. THAWZONE, the moving dehydrant, circulates and searches out moisture, destroying it chemically. For new and reconditioned units, as well as old.

2. TRACE is a highly effective refrigerant leak detector. Its stable red color reveals leaks instantly in old or new systems.

These two products are partners in purpose . . . to keep refrigeration systems at the height of efficiency.

HIGHSIDE CHEMICALS COMPANY

195 VERONA AVE., NEWARK 4, N. J.

liquid and suction connections can be bent to any desired shape or shortened as desired.

Home Refrigerator • • • P-91

Product: 8-cu.ft. household refrigerator, lead model of a newly designed line.

Manufacturer: General Electric Co., Bridgeport, Conn.

Features: 8-cu.ft. capacity, yet occupies no more floor space than the average 6-cu.ft. box. This added 2 cu. ft. of storage capacity made possible by a new and smaller refrigerating unit which weighs only 77 pounds, freezes 16 pounds of ice in 6 hours, and operates at a national average monthly cost of only 57 cents. Side-mounted freezing compartment is of stainless steel and is equipped with a defrosting indicator. Shelf area totals 15.1 sq.ft.

Rub-On Solder • • • • P-92

Product: Low-temperature rub-on solder known as All-State No. 39.

Manufacturer: All-State Welding Alloys Co., Inc., White Plains, N. Y.

Features: Economical alloy that is applied without flux. Good matching color and fair corrosion resistance. Recommended for filling and soldering where tightness is essential

---

Freezer Alarm • • • • • P-93

Product: Model FA-200 freezer alarm for frozen food cabinets.

Manufacturer: Enterprise Products Co., Freeport, Ill.

Features: Wall mounted aluminum case houses hydraulic actuated alarm thermostat, warning bell, test switch, and battery. Six-foot capillary tube provided to extend under freezer lid and into food compartment. Fixed calibration to sound alarm when temperature of cabinet raises to 25 F. Supplied complete with installation instructions, but with 6-volt ignition type dry battery to be supplied by consumer. List price, less battery, $17.50.

Home Freezer • • • • P-94

Product: Compact 3.2-cu.ft. home freezer with a capacity of 100 pounds of food.

Manufacturer: Crosley Div., Avco Mfg. Corp., Cincinnati, Ohio.

Features: Consumes no more current than regular household refrigerator. Factory set temperature control needs no re-setting. Powered by hermetically sealed unit in base. Spring mounting of motor and compressor and accoustic baffling combine to provide quiet operation. Flush to the floor contruction with toe-kick space. Wire basket for quick visual inventory. Automatic safety latch and

Continued on page 77

NOW AVAILABLE! SENSATIONAL ELECTRONIC DEVICE

SHUR-TEMP FREEZER ALARM

Here's an electronic alarm that is a money-maker... It gives positive protection for home, farm and commercial plant freezers.

IT SELLS ITSELF

- Not connected with electrical supply.
- Operates without capillary tube.
- Encased in unbreakable metal.
- Absolute protection against food spoilage.
- Every low temperature service call means a Shur-Temp sale.
- This is the season for additional profits with Shur-Temp.

EASY TO INSTALL TOO!

Insert the Thermo-Switch inside the freezer, then hang Shur-Temp in any part of building. Takes less than five minutes to install.

FILL OUT THE HANDY COUPON

ORDER CARD—MAIL IN TODAY

CRAWFORD ENGINEERED EQUIPMENT CO.
413 Merchants Exchange Bldg., St. Louis 2, Mo.

Please ship at once ....
Parcel Post *Express* *Freight*
(.....) Shur-temp Freezer Alarms.
No. units
If we are not completely satisfied it is understood that we may return within five days for a refund.

NAME.....
ADDRESS.....
CITY.....STATE.....
.....
Jobber's Name and Address

$15.95 RETAIL PRICE

$9.57—DEALERS PRICE F. O. B. WRIGHT CITY, MISSOURI

2% CASH DISCOUNT ON ORDERS OF 12 UNITS OR MORE

Price subject to change without notice.

NEW!

Small size cylinders of Oxygen and Acetylene for welding and cutting

Light Weight • Convenient
No Monthly Rental Charge

In response to a demand for oxygen and acetylene in "smaller packages," The Linde Air Products Company has brought out two new sizes of cylinders that now make it possible for everyone who works with metals to take advantage of the speed and economy of oxy-acetylene welding and cutting.

These new sizes of cylinders are particularly well-suited to the needs of contractors, installers, and service men in the heating, plumbing, ventilating, and air conditioning fields because their light weight permits them to be taken out on the job wherever needed. They are also ideal for garages, electrical repair shops, sheet metal works, and for many manufacturing plants where welding and cutting are needed but only for light or occasional work.

A "cylinder allotment" plan has been set up to assure you of having cylinders always available when you need them . . . a plan that entirely eliminates monthly cylinder demurrage. These cylinders are available everywhere through authorized LINDE Distributors who will be glad to explain the details.

LINDE Distributors can also supply you with complete outfits for welding and cutting and can help you... from the complete PREST-O-WELD or PUROX lines... select the outfit exactly suited to your work. PREST-O-WELD and PUROX equipment is also available through leading industrial and automotive jobbers.

"Q" Oxygen Cylinder*
80 cu. ft. capacity
Height 35 in.
Weight, filled 67 lb.

"WQ" Acetylene Cylinder
60 cu. ft. capacity
Height 24¾ in.
Weight, filled 55 lb.

*In some areas, the oxygen cylinder has 70 cu. ft. capacity and is called the style "XL." It weighs 55 lb. when filled, and is 41 in. high.

THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
30 E. 42nd St., New York 17, N. Y. UCC **Offices in Other Principal Cities**
In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

LINDE OXYGEN
PREST-O-LITE ACETYLENE
UNION CARBIDE
OXWELD RODS AND SUPPLIES

"Linde," "Oxweld," "Prest-O-Weld," "Purox," and "Union" are registered trade-marks.

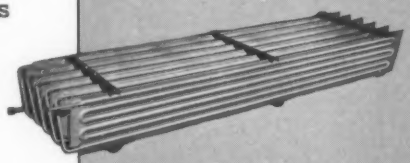
KOLD-HOLD

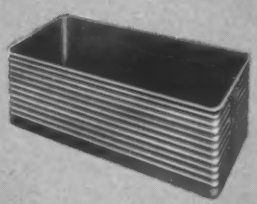
EVAPORATOR PLATES

For ALL Lowside Applications

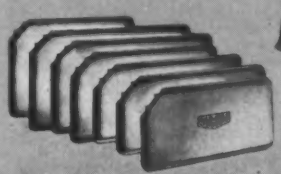
The New Kold-Hold "Quick-Action" Serpentine Plates offer outstanding economies and efficiency. Specifically, these plates either used separately, in banks, in plate stands, or as complete cabinet liners, assure you the following advantages:

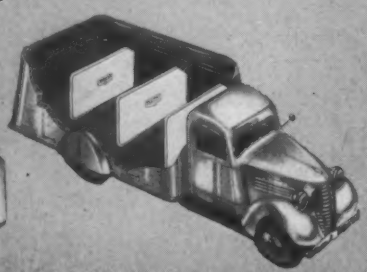
1. Easy installation.
2. Maximum prime surface.
3. Highest rate of plate heat acceptance.
4. No possibility of short circuiting the flow of refrigerant which flows in one continuous pass from inlet to outlet.
5. Oil logging positively prevented.
6. Minimum pressure drop.
7. Tested to 300 lbs. per square inch pressure.
8. Has an appreciably higher "K" factor.
9. Thoroughly cleaned and dehydrated.





For transportation of perishables, Kold-Hold Truck Plates prevent loss from spoilage, preserve truck bodies and eliminate unnecessary time losses from loading and unloading.





KOLD-HOLD

(Write For Complete Catalog!)

KOLD-HOLD MANUFACTURING COMPANY 503 E. HAZEL STREET, LANSING 4, MICHIGAN

table top work surface of linoleum with polished aluminum trim. Needs to be defrosted only twice yearly. Exterior measurements: height, 36 inches; depth, 26¼ inches; width, 29¾ inches.

Copper Driers • • • • P-95

Product: Copper dehydrators in 2-inch and 1-inch o.d. sizes.

Manufacturer: Cyrus Shank Co., Chicago.

Features: Non rusting. Provided with felt screens and felt filters. Large size is made with ¼ and ⅜-inch flare fittings. Ends are brass forgings with large hexagon area for easy service mounting. Copper tube is sweat fitted to the forging. Small size is copper tube with spun ends. Brass end fitting, properly proportioned, is silver soldered.

Window Fan • • • • • P-96

Product: Lightweight 18-inch window fan for exhausting stale air or pulling in fresh air; applicable for home, office, or factory.

Manufacturer: Lau Blower Co., Dayton, Ohio.

Features: Powered by 3-speed motor. Equipped with special blades. Base bracket is cushion mounted with rubber spot treads. With two lengths of chain, the fan can be suspended from window frame at desired air-directing angle. Streamlined and finished in two-tone baked enamel.

Utility Motor • • • • • P-97

Product: General purpose universal motor rated at 1/10 hp at 5,000 rpm

Manufacturer: L & R Mfg. Co., Arlington, N. J.

Features: Spindle with ⅜-inch shaft extending in both directions, and double shielded ball bearings that never require oiling. Outside diameter is 3¼ inches. Mounted on pedestal and supplied with three-step pulley, foot rheostat, and reversing switch. Available in limited quantities. List price $33, fob Arlington.

Vane-Type Pump • • • P-98

Product: Positive pressure vane-type pump (Model VW-1) for handling non-lubricating liquids.

Manufacturer: Eastern Engineering Co., New Haven, Conn.

Features: Designed for use in systems having a relief valve, and therefore has no bypass valve built in. Delivers approximately ½ gpm, and is suitable for operating pressure of from zero to 30 psi. Self priming.

$250,000 TEXAS PLANT

The first commercial locker plant in Corpus Christi, Tex. has been opened at 614 South Staples St., by M. H. Blum, J. Benjamin and Philip Israel. The plant covers more than 4,000 square feet and has a locker capacity of 2,000. The plant's cost is estimated at $250,000.

MORE LOCKERS FOR GA.

Tifton Frozen Foods, Inc., a $200,000 locker and cold storage plant operation, has been opened in Tifton, Ga., by Harry Hornbuckle, president; J. G. Chamblis, vice president and general manager; and W. S. Weeks.

NOW . . a cold-box type "Serviceman"

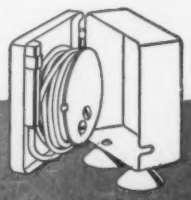
RANGE
– 30° to
+ 65°!

Marsh does it again . . . first!

IT'S the celebrated Marsh "Serviceman" with range increased to match your ever-increasing work on quick freeze units. Yes, it now indicates from —30 to +65 degrees F. Along with this it has all the features of the original "Serviceman"—the same accuracy, same utility, same ability to tell you what's going on behind the closed door. Here is a "must" for your service kit.

JAS. P. MARSH CORPORATION, 2055 Southport Avenue, Chicago 14, Illinois

★ A heavy-duty precision movement, guaranteed accurate within one degree. Has Marsh "Recalibrator" to *keep* it accurate. Note hinged back containing bulb and 5 ft. of tubing slender enough to pass between refrigerator door and jamb. Suction cups prevent slipping and protect surfaces. The "Serviceman" is still available in ranges—10° F. to +100° F.



MARSH
Refrigeration Instruments

ABOUT PEOPLE . . .

Continued from page 50

versal Cooler Corp., where he served as administrative engineer. Mr. Norris will be in charge of Kerotest's new West Coast offices at 315 West 9 St., Los Angeles.

•

Russell W. Ayres, formerly with Coolerator Corp., has been appointed chief engineer of Seeger-Refrigerator Co., succeeding Walter Ellsworth, who has resigned.

•

Research developments in gas-fired absorption refrigeration have won for **Walter L. Edel,** formerly dean of the school of engineering at the University of Connecticut, a promotion to vice president of Clayton & Lambert Mfg. Co in charge of engineering and research. Mr. Edel joined Clayton & Lambert in 1943.

S. James Krakow has been named director of sales for Frostedaire Corp.

Frostedaire, a division of West Side Iron Works. is a New York manufacturer of ice cream cabinets, freezers, frosted food cases, and beverage coolers. Mr. Krakow formerly was with General Refrigerators Corp.

A 15% increase in frozen foods sales has been accomplished by grocer George E. Chiavola of Kansas City, Mo., since he perfected a lid top for frozen food cases that eliminates steam-fog, thus enabling customers to always see the food on display.

Made from a plastic material used in the noses of bombers and purchased from government surplus stocks, the lids Mr. Chiavola designed are hinged for two different types of cases, instead of sliding back and forth. For narrow cases, the hinges of the lids are attached to the backboard so that the lids flap backward similar to the page of a calendar, and for the bigger, wider cases, the lids are hinged in the center opening in the same manner as do the pages of a book. The lids are approximately 11½ x 22" and ½" thick. To insure a precise fit, grooves ½ x ¼" are cut in the edges.

Cost of converting his four closed-top refrigerated cases into the transparent top variety came to only $45, Mr. Chiavola said.

He is planning to apply for a patent for his lid, and at the present time is making lids for other merchants in the vicinity.

Due to the retirement of G. L. Brunner, Sr., from the management of Brunner Mfg. Co., **A. G. Zumbrun** has been named chairman of

Mr. Zumbrun

Mr. Sullivan

the board of directors and managing director of the company. G. L. Brun-

TEST

. . . for volts, amperes, or watts with this one small, compact instrument

Here is the first appliance tester ever made that gives you volt, ampere, and wattage readings all from one small, compact instrument.

Model 390 slips easily into a large pocket, weighs only a pound and a half, is designed for hard, continuous service.

The range of uses for this volt-amp-wattmeter is almost unlimited in checking line voltage, current drain and power consumption, the three simple tests which will diagnose most cases of electrical trouble. In fact, practically any household electrical appliance that has a motor or a heating element, can be tested by the 390, as well as certain industrial installations.

You merely plug Model 390 and appliance to be tested into the Break-In plug furnished—voltage will read. To read watts or amperes, simply press one of the two buttons at bottom of the panel.

Aside from its unique features, Model 390 has no equal among appliance testers in quality alone. The famous Simpson quality makes investment in the Model 390 an investment that will return a rich yield in satisfactory service through the years.

USE MODEL 390 FOR TESTING

Refrigerators	Motors
Deep Freezers	Electric Heaters
Washing Machines	Radio Sets
Irons	Lamps
Toasters	Vacuum Cleaners

and all similar appliances

Simpson Model 390 Volt-Amp-Wattmeter

Ranges—A.C. Current, 60 cycles
Volts: 0-150, 0-300.
Amperes: 0-3, 0-15.
Watts: 0-300, 0-600, 0-1500, 0-3000.
Size: 3" x 5⅞" x 2½". Weight 1½ lbs.
Shipping weight 3 lbs.
Price, with Break-In plug and leads $39.50
Leatherette carrying case, with leads compartment..... 4.00
Genuine leather carrying case, with leads compartment..... 8.00

SIMPSON ELECTRIC COMPANY
5200-5218 W. Kinzie St., Chicago 44, Ill.
In Canada Bach-Simpson, Ltd., London, Ont.

Simpson
INSTRUMENTS THAT STAY ACCURATE

ner, Jr., continues as president. Mr. Zumbrun has been active in the company since 1925. He was elected vice president and general manager in December, 1945. In another appointment, **Alfred D. Sullivan** has been named chief engineer of Brunner. Since joining the company in 1945 he had been in charge of development research and experimental engineering.

•

Ralph E. Lee has been named manager of the unit heater sales department of Trane Co. **A. H. Kaulfuss,** long an engineer in the department, has been named assistant manager.

•

Three new district managers—**O. J. Kesti, E. R. Murphy,** and **D. G. Portley**—have been appointed by Lehigh Mfg. Co. Mr. Kesti, with

Mr. Kesti - Mr. Murphy - Mr. Portley

headquarters in Detroit, will cover Michigan, Ohio, West Virginia, Kentucky and Indiana. Mr. Murphy, with headquarters in Brookline, Mass., will cover the New England states, eastern New York to Utica, and the eastern part of Canada. Mr. Portley, with headquarters in Alameda, Calif., will cover the West Coast, Montana, Wyoming, Utah, and Arizona.

•

Appointment of **J. L. Knight** as Erie Works engineer and **L. W. Atchison** as assistant works engineer of General Electric Co.'s household refrigerator division, has been announced. **D. F. Newman,** former refrigerating unit engineer of the division, has retired because of ill health. Mr. Knight, who becomes responsible for refrigerator unit and cabinet and home freezer engineering, headed the company's refrigerator cabinet engineering section until his recent appointment. Mr. Atchison was assistant engineer.

•

C. W. Main has been appointed a field representative of Plomb Tool Co. He is headquartered in Denver, and his territory includes Colorado, Wyoming, and parts of South Dakota and Nebraska.

•

R. C. Cosgrove, general manager of Crosley Div. and vice president in charge of sales of Avco Mfg. Corp., has been elected to the board of directors. Mr. Cosgrove was vice president and general manager of the Crosley Corp. prior to its acquisition by Avco.

MALARKEY JOINS SIMONS

Robert A. Malarkey, formerly associated with Bush Mfg. Co., has joined Joseph Simons Co., refrigeration parts wholesaler in Hartford, Conn., in a sales and engineering capacity.

NIBCO *Wrot Fittings* OF TODAY

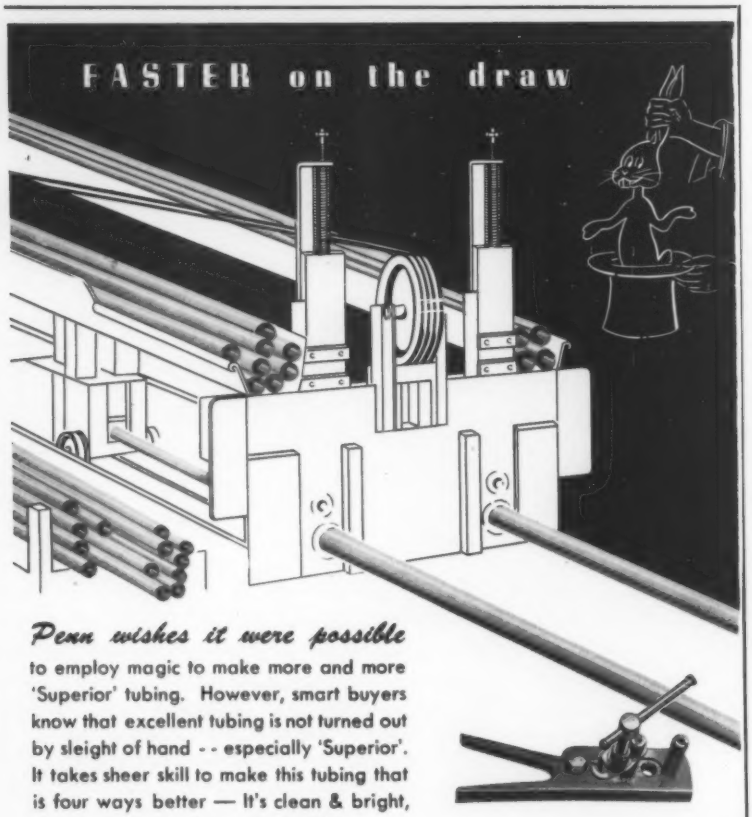
MAKE COPPER PLUMBING AVAILABLE IN LOW COST HOUSING . . .

HERE'S the amazing story of NIBCO engineering genius and the benefits it has brought to you through twenty years of continuous development and research. When NIBCO introduced copper plumbing in 1928, a ½" Tee weighed 18 ounces and cost 76 cents. Today it weighs only 2 ounces, yet it is stronger, easier to handle and better in many ways . . . and even in an inflated copper market, it still costs less than 20% of the original price! NIBCO WROT Fittings are made by patented processes which assure absolute uniformity with close tolerances accurately maintained. Specify NIBCO WROT Fittings on all jobs. They make stronger joints . . . and every copper installation brings you more business.

NORTHERN INDIANA BRASS COMPANY • ELKHART, INDIANA

MORE PROFIT · EASIER WORK · BETTER TOO

Some of the officers and guests of the Greater Toledo chapter of the Refrigeration Service Engineers Society relax at the group's annual "fish fry". Left to right are: Emmett Gresham and Dean Mohr, Heat & Power Engineering Co.; Mark Dennis, treasurer; Wm. Foster, president; Harold Dille, secretary; Taylor Benington, chairman, entertainment committee.



Penn wishes it were possible to employ magic to make more and more 'Superior' tubing. However, smart buyers know that excellent tubing is not turned out by sleight of hand - - especially 'Superior'. It takes sheer skill to make this tubing that is four ways better — It's clean & bright, dry, seamless, and so easy bending.

Although production is being increased to meet the mounting demand in Refrigeration, Automotive and Bottled Gas industries, Penn still wishes they could wave a magic wand and furnish all with 'Superior' tubing.

BE FASTER ON THE DRAW and plan now to use 'Superior' for your tubing needs. Write today for full information and colorful literature.

PENN TUBING IS "SUPERIOR"

the FLARING TOOL *that works like "sixty"*

The Papco #400 is a compact flaring tool that holds six sizes of tube and gives you a quicker, easier and better flare. Send for Bulletin.

GET YOURS NOW

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RSES NAMES EDUCATIONAL AND EXAMINING BOARD

Nine refrigeration men have been named to the international educational and examining board of the Refrigeration Service Engineers Society by president W. W. Allison. Paul B. Reed, manager of the refrigeration controls division of Perfex Corp., continues in his capacity as chairman of this group.

In addition to Mr. Reed, the committee will be composed of: Harry D. Busby, managing editor, The Refrigeration Service Engineer; J. L. Rosenmiller, manager of the accessory equipment and maintenance department, York Corp.; Albert F. Sawyer, engineer, Dole Refrigerating Co.; A. M. Schmitz, manager of the northeast district of the electric refrigeration division of Servel, Inc.; J. H. Spence, service manager, Hussman Refrigeration, Inc.; Dr. Walter O. Walker, research director, Ansul Chemical Co.; A. M. Fenwick, past chairman of the educational committee and present educational director of the Buckeye State Association; and L. P. Roth, president and treasurer, Refrigeration Service, Inc.

TWO air conditioning systems for the price of one—that's the effect which will be achieved by the Concord hotel on Kiashema Lake in the Catskill Mountains when Carrier cooling equipment is installed by Greenwald-Supon Co. of Monticello, N.Y.

Both the hotel's huge dining room and the night club on the floor beneath it will be handled by the single cooling and dehumidifying system. This is made possible by the fact that the heat load of the two rooms is approximately equal and that the rooms are used at different times of the day. Automatic dampers will direct the cooled air to the dining room during meal times and to the night club after 9 p.m.

RANCO LAUNCHES HOUSE ORGAN FOR EMPLOYEES

Ranco, Inc., Columbus, Ohio, maker of controls for refrigeration and air conditioning equipment, has launched publication of a new employee house organ titled "Contact." The magazine will be published monthly under the direction of Louie Levengood, industrial relations manager. He will be assisted by 33 other plant editors and reporters for the firm's more than 1,000 employees.

COLD PLATES . . .

Continued from page 41

plates so it will drop off in slabs.

I recently saw such a job being installed with hand valves for hot gas manifolded near the condensing unit. Individual hot gas lines of 5/8" o.d. copper then led to each of six banks. On asking if copper tubing could not be saved by running one main hot line into the room, then taking off with a valve to each bank, the contractor advised he had done this on previous jobs with unsatisfactory results. His experience was that the particular type of hand valves used had developed leaks when used in a cold room but no leaks occurred when the valves were placed outside.

Another defrost method is illustrated in the ASRE 1939 Data Book. It is shown as defrosting two evaporators but may be used with any number. The main feature is that the hot gas travels in opposite direction to normal refrigerant path. A hand valve is placed in the sub-return from the bank, then hot gas introduced into the sub-return. It condenses and passes as a liquid through the bank to the expansion valve where a by-pass with hand valve allows it to pass around the expansion valve and enter the main liquid line to do its normal work in other banks.

—*Chain Store Age*

"Come now, Taylor—I hardly think appealing displays are necessary in there."

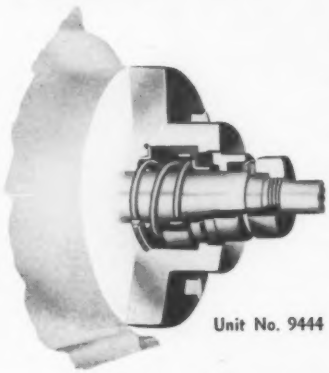
We are constantly running into developments on the business side of locker plant operation which could not have been foreseen a few years ago. Up to the time of the war, the rule of thumb for determining locker plant freezing capacity was 2 pounds of product per locker per day. This figured 400 pounds for a 200-locker plant. We now plan on 3 pounds per locker per day and this may be far off in some cases.

I recently visited a 200-locker plant installed just before the war using shelf type freezer plates with space greatly in excess of requirements. I asked the owner how he liked it and he said it used to work fine but didn't freeze as fast as he wanted now. On inquiring how much product he was putting through daily, he said 1500 pounds every day except Sunday and Monday.

This would seem impossible on paper as there was only a 3 hp water-cooled condensing unit doing the freezing as well as holding, or trying to hold, zero in a room 17 feet wide, 32 feet long and 9 feet high, inside dimensions.

Using the generally accepted figure of 12,000 Btu per 100 pounds for freezing, this daily load is 180,000 Btu. Based on 18 hour condensing unit operation in hot weather, this requires 10,000 Btu/hr alone from the compressor. Since a 3-hp unit is rated at about 12,500 Btu hourly at —20F refrigerant, this leaves about

AN IMPORTANT MESSAGE TO SERVICE ENGINEERS!



Unit No. 9444

Before attempting to repair the seal on your larger size compressor jobs, we suggest you check our current stock list of ROTARY SEAL REPLACEMENT UNITS. It includes units for commercial and semi-commercial compressors such as:

Baker
Brunner
Carrier
Copeland
Curtis
Frigidaire
General Electric
Kelvinator
Mills
Par
Universal Cooler
Westinghouse
York and others

You get all the important benefits with ROTARY SEAL—
Simplicity in CONSTRUCTION, INSTALLATION and OPERATION

SEE YOUR JOBBER

THE mechanical seals for ROTARY SEAL COMPANY rotating shafts

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2500 Btu hourly to cool the room, or about the equivalent of a ½-hp unit. Obviously, the unit had to run all the time except Sunday and Monday and at a high back pressure and resultant high refrigerant temperature.

The owner advised me he was thinking of putting in a blower to help pull the room down lower. It appears a local refrigeration man advised him no additional condensing unit was needed. Cases like this one certainly are interesting and provide food for thought as to better training programs for installation men.

Another plant laid out for 400 pounds daily was freezing 1000 pounds. This was located by a large lake and fish were plentiful, so their output included about 25 boxes of 20 pounds each which were frozen daily and sold to truckers. After trips of 300 to 500 miles, the fish were then sold at points bringing a good price. No refrigeration was supplied enroute, the stored up refrigeration serving to hold fish below 32 F in corrugated board containers. Doubtless the product was about thawed out when sold but since it would probably have to be thawed for merchandising anyway, it was not an objection.

Occasionally we are called in for recommendations on plants where plates are not frosting properly. We then check all details of installation to determine the cause. It may be low gas which a liquid line sight glass will indicate. Lacking this, we listen at the expansion valves and if a loud hissing noise is heard we suggest adding refrigerant. Sometimes too small a dehydrator is used in the liquid line, resulting in flash gas in the liquid line and a greatly decreased liquid feed to the expansion valve. If the outlet of the dehydrator is at all cooler than the inlet, dehydrator should be removed and checked for dirt or restriction.

Common Trouble Cited

One of the more common troubles is improper installation of sub-returns from banks or plates. In every case the sub-returns should enter main returns at top or, if this is not possible, at side, with sub-returns sloped downward, so slop-over from one refrigerant circuit cannot run back in another sub-return. It is seen that improper layout can cool the bulb of the thermostatic valve on an adjoining bank, thus shutting off the wrong thermostatic valve. This same principle holds true on shelf plate installations, otherwise some plates will not refrigerate.

All low temperature jobs should have an oil separator as an excess of oil in refrigerant will result in the boiling point of the mixture being several degrees higher than indicated on the pressure temperature chart.

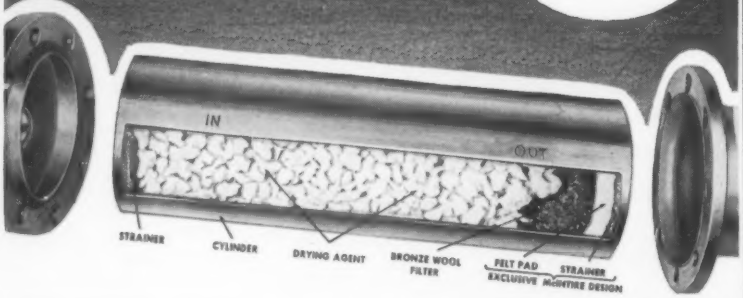
Plate banks may be operated in series or parallel, but if in series not more than 100 sq. ft. of plate total should be used on one thermostatic expansion valve in order to keep pressure drop at a minimum. Overhead plate banks larger than 100 sq. ft. should be made up with headers (parallel), thus reducing pressure drop, otherwise two circuits with two valves are recommended.

In order to function properly, plates must have coils nearly horizontal within, so constructed that refrigerant path entering at bottom, travels gradually upward in a constant up-hill path. The plates will then feed evenly since operation is based on the old physics principle of a liquid finding its own level. If one plate tends to get more or less re-

Not Just One--

STOP ALL 3

FREEZE-UPS
CLOGGING
CORROSION



New!

DFN MOISTURE INDICATOR

Tells quickly if system is wet or dry. For Freon and Methyl Chloride. Simple, accurate, inexpensive. No shutting down of unit. Ask your jobber, or write for details.

● The DFN System stops those triple threats of trouble—moisture, sediment and acid. And it stops them in greater volume, thus, requires less recharging. Each DFN cartridge is scientifically factory-packed—provides complete refrigerant dispersion—insures thorough contact with the drying agent. Hermetic sealing preserves 100% dehydrating effectiveness. An exclusive filter-strainer traps the finest particles and hold more without pressure drop.

The DFN System is simpler and faster to service. Cartridge is easily replaced in the permanent shell—no fuss, no muss and no loss of dehydrating strength. This complete protection, greater capacity and servicing ease makes the DFN System the outstanding value in its field. Ask your distributor or write today for Catalog R-7.

McIntire Connector Co. 257 Jefferson St., Newark 5, N. J.

Only the DFN SYSTEM

DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS FILTERS • NEUTRALIZERS

frigerant than adjoining plates, it will immediately balance out.

This condition however, does not hold true when refrigerant supply is low. Then there is so much volume of dry gas that even levels in plates cannot be maintained. It is seen that banks must be hung in horizontal position for good operation, using spirit level to check this, both across and the long way of plate bank.

Thermostatic valves of correct size must be used of course. The 15,000 Btu size takes care of most low temperature installations. A plate bank of 144 sq. ft. working on 2K and 16 T.D. figures 4608 Btu/hr, but since most valve manufacturers rate a valve at only half capacity for low temperatures, the resulting 7500 Btu provides sufficient reserve.

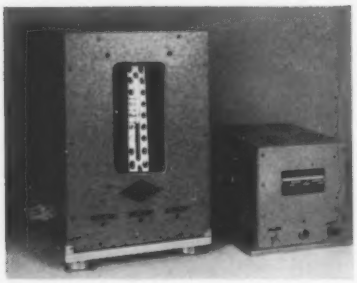
Too small a valve will not flood the plates and too large a valve results in a surging action. In this latter case, too much liquid will flood the plate, then causing the valve to close entirely for a time. A modulating effect is to be desired with the valve in half-way position most of the time for even feed.

Some locker plants have one condensing unit taking care of all refrigeration requirements but it is always desirable to have a separate unit for the high temperature rooms such as chill and ageing. Many plants use one condensing unit for cooling locker room and operating fast freeze plates, but it is considered safer to use two separate condensing units.

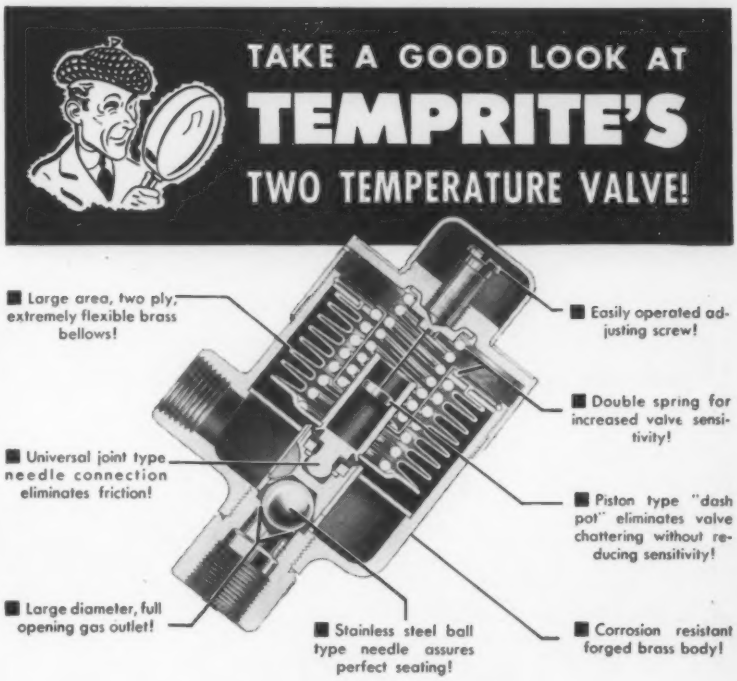
For the average plant set up in this manner, the unit for freezing is about one half the size of that for cooling the locker room, but piping can be arranged so this smaller unit will take the load in case of repairs on larger one. Probably no freezing would be allowable in this period but the food in lockers could still be held around 10 F until repairs were made.

These observations are made to illustrate some of the many details to be watched in installing plates in locker plants or similar low temperature applications. Installation men and contractors should use the greatest care in laying out and checking all jobs, making each a credit to the industry as well as building up a reputation for good workmanship. There are dozens of ways to put in a job right but a million ways to do it wrong.

SUPER SIGHT



Hailed as the first successful application of television to the problem of industry is this sight-transmitting system known as the "Utiliscope," produced through the collaboration of Farnsworth Television & Radio Corp. and Diamond Power Specialty Corp. The Utiliscope shows, on a screen similar to that of a home television receiver, an exact picture of something currently taking place at a remote or inaccessible point. In the illustration above, the Utiliscope viewer shows the image of a boiler gauge exactly as transmitted from the photo-electric camera unit at the boiler some 325 feet away. The smaller unit is for power supply. Industrial technicians regard the Utiliscope as ideal for such operations as observing remotely located temperature gauges in large warehouses, especially those involving refrigeration.


TAKE A GOOD LOOK AT
TEMPRITE'S
TWO TEMPERATURE VALVE!
Large area, two ply, extremely flexible brass bellows!
Easily operated adjusting screw!
Double spring for increased valve sensitivity!
Universal joint type needle connection eliminates friction!
Piston type "dash pot" eliminates valve chattering without reducing sensitivity!
Large diameter, full opening gas outlet!
Stainless steel ball type needle assures perfect seating!
Corrosion resistant forged brass body!

Sensitive operation, perfect sealing seat, large capacity and rugged construction! These are the features that have made Temprite Two Temperature Valves "tops" in the constant pressure valve field. Competitively priced in four standard sizes, they are available for immediate delivery. Write today for full particulars on these valves and also the complete line of Temprite quality products.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous 80°-40° *Liquid Cooling Devices*

41 PIQUETTE AVENUE DETROIT 2, MICHIGAN

★ Federal ADD-A-PANEL
All Steel Clad WALK-IN REFRIGERATOR

6'8" or 8'6" high

Sections pre-fitted. Simple to assemble, move or enlarge

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Standard door panel may be placed anywhere around the box

Designed to meet today's Food Storage Demands...

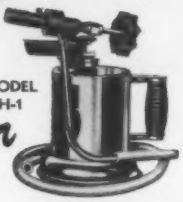
Only Federal Offers These "Peak of Protection" Features:

Insulated panels can be furnished to add service or sliding doors for display service unit • Porcelain trim can be added for sparkling beauty for your shop • Front panel can be furnished with four or eight sliding doors for self service • A 33 cu. ft. quick freeze cabinet can be installed in any Federal walk-in.

Write for booklet and name of nearest dealer

Federal REFRIGERATOR MFG. CO.
COMMERCIAL REFRIGERATORS ★ WAUKESHA, WIS.

DETECTS EVEN THE SMALLEST GAS LEAK IN "JIG TIME"



MODEL H-1

Turner

HALIDE REFRIGERANT GAS LEAK DETECTOR

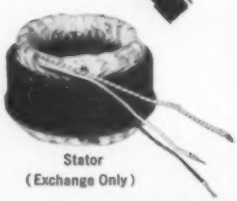
Find leaks involving all chlorinated hydrocarbon refrigerants quickly and accurately with Turner's highly-sensitive Model H-1 Halide Detector. This blowtorch-type burner employs a simple chemical principle... flame becomes *green* whenever gas is present in the area surrounding a defective cooling unit. Designed and constructed throughout for long, dependable service. Has a flexible exploring tube for easy probing in "hard-to-get-at" places; holds one pint of alcohol fuel; measures 8" from handle to tip of burner x 7½" high x 4½" wide; can also be used as a blowtorch.

AVAILABLE FOR IMMEDIATE DELIVERY

Made by the manufacturers of nationally-known Turner Blow Torches.

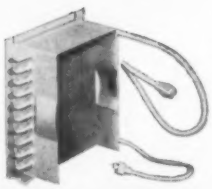
THE TURNER BRASS WORKS
SYCAMORE ILLINOIS
Since 1871

LOOK—*Genuine GRUNOW PARTS*

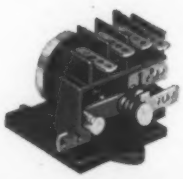


Stator (Exchange Only)

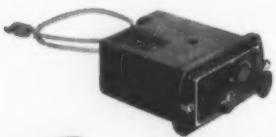
11234-5 Carrene Meter



9851 Radiator Condenser



5745 Relay



10708 Thermostat

10200 Float Meter

10949 Fan

Grunow AUTHORIZED SERVICE, INC.

4313 W. Fullerton Avenue, Chicago, Illinois

GRUNOW AUTHORIZED DEALERS ARE MAKING MONEY! BUILD UP YOUR NEW BOX SALES WITH GRUNOW SERVICE BUSINESS. WRITE FOR AUTHORIZED SERVICE IN YOUR TERRITORY!

Over the COUNTER

HERE are some ideas you might be able to make use of in your job of keeping up-to-date on your sales and service customers and prospective customers.

They're the information a top-flight dealer acquaintance of ours has been keeping on his customers, new and old, for a number of years. He says he couldn't have stayed in business without knowing at least this much about the people with whom he deals. And we believe him.

Keeping this information is what's most important; it doesn't matter much what particular form you keep it on. Here's the way this dealer acquaintance of ours has it set up:

Let's take his service customers first—he has them set up on 5 x 8 file cards for use in a card-index system which makes them instantly available for quick reference in case the customer calls in with a hurry-up problem—he lists, besides name, phone number, and address, all pertinent details on the type of equipment in use by the customer.

This information includes refrigerator name, model, and serial number; date of installation and warranty data; name and horsepower of electric motor, its serial number and type; whether the system is air-cooled, and the type of refrigerating system which the condensing unit (or units) serves.

All of the above information covers less than half of one side of the file card. The balance of that side, and all of the back side of the card, is ruled off for strictly "business information". Columns are left open to show date of service call, the call number (for accounting records), complaint, remedy, data as to guarantee status, and information on whether the call was "cash" or "charge". In the case of charge calls, the last column on the card is left open to show the date the customer paid the bill.

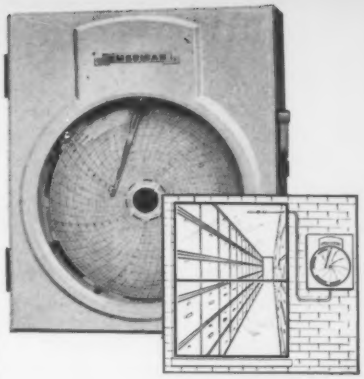
By using a 5 x 8 card there's plenty of room to list the average commercial (or household) customer's calls for a couple of years. And the way this one's set up, you have "the works" when you pick it out of the index file—equipment information, warranty data, and credit information, all at the same time.

Suppose the particular customer who calls in for service hasn't settled up for the last two or three jobs you did for him—the card will tell you, and that's your cue to find out why. Maybe he's had some tough luck financially . . . or maybe something about your work wasn't up to its usual standard. You can peg it plenty fast if you have the basic information to start with.

"That form's o.k. for putting but it won't get you distance."

Another thing . . . maybe you notice in going through the card file that some of your customers haven't been very active of late. Maybe you'll want to get out a special mailing to a few of them, or get in touch with them by phone to see what's wrong.

If you've got a system already set up, check up and see if you're using it to best advantage. If you haven't, better set one up. Competition's getting tougher every day, you know.



Proof positive

POSITIVE proof of accurately maintained temperatures? Certainly! But the AMERICAN LOCKER ROOM RECORDER goes far beyond this basic requirement of accuracy and sensitivity.

Built with an all stainless steel, atomic welded system and furnished in a gleaming white enamel non-ferrous case, the AMERICAN is a permanent investment—as durable as the locker plant itself.

Even the recording pen is made of glass and cannot corrode, rust or wear. It draws a clear fine record line which never blots or digs into the chart.

The record chart, scientifically designed for proper ink absorption and resistance to dampness, is graduated from minus 30 to plus 70° F. It revolves once in 7 days and is arranged with the lowest temperatures on the outer edge for reading ease.

Shipped complete ready to install with bracket for attaching bulb inside the storage room, and mounting plate which fastens to the wall upon which the instrument is hung.

American Glass, Dial and Recording Thermometers are sold by leading distributors everywhere. Write to them or to us for information

AMERICAN
Industrial Instruments
A Product of
MANNING, MAXWELL & MOORE, INC.
BRIDGEPORT 2, CONNECTICUT
Makers of 'American' Industrial Instruments, Hancock Valves, Ashcroft Gauges, Consolidated Safety and Relief Valves.

PROTECTIVE PRICE PLAN

EVIDENCE is accumulating that an increasing number of buyers are shying away from purchases in the expectation of a substantial price-break. Refrigeration dealers finding cash-on-the-line orders something less than anticipated may be interested in the merchandise plan of L. K. Ward, Los Angeles, who operates a chain of refrigeration and appliance stores in southern California.

This dealer found a large number of prospective customers suddenly contract-shy after pestering the firm for deliveries. Analysis revealed the common denominator of sales resistance: fixed belief that prices were going to drop substantially. So Ward's has issued a certificate which guarantees to pay the customer the amount of any price drop on merchandise bought during the balance of 1947.

"Frankly," said Ward's revolutionary statement of policy, "we are making this offer because we do not anticipate a downward trend in appliance prices. Therefore we are willing to back up our conviction with this unique and amazing offer, so that you may have the appliance or radio you want now without being concerned about a future price drop. If we are wrong, we will cheerfully pay in accordance with our Protective Price Plan with the sincere feeling that the enjoyment you will get now by having one of our new radios or appliances in your home will make it worth while."

The guarantee reads: "We do hereby agree to refund in cash, unconditionally, the full difference between the purchase price paid and such reduced price as the manufacturer may establish during the year 1947 on any appliance, radio or radio-phonograph combination you may purchase at any store of ours on or after April 1, 1947."

Ward's points out that the buyer is protected by their plan both against a possible price increase or a price decrease.

IS IN THE
PURE CARBON
BRUSHES . . . KIT No. 4

An assortment of brushes for the most popular makes of refrigerator motors—strong metal edge box with individual removable compartments—brushes easily removed —36 sets of popular brushes will service 90% of refrigerator motors.

PURE

PURE CARBON COMPANY
449 Hall Avenue St. Marys, Pa.

NEW G-E SECTION ON COOLING PARTS

Establishment by General Electric of a Products Section to handle parts and components of the Air Conditioning Department products has been announced by G. R. Prout, vice president and general manager of the department. W. S. Mersman will manage the Products Section at Fort Wayne, Ind. and will handle procurement, warehousing, marketing and shipping of renewal parts.

The Bloomfield, N. J. Products Section will be divided into two branches, J. H. Wood handling sales, cataloging, pricing and customer services and G. A. Richardson supervising procurement and shipping and handling "repair and return" material and equipment.

"Personally, I don't know—but that American salesman told me they'd keep fresher this way."

FRIGIDAIRE MOVES MILLER TO OKLAHOMA CITY

Harry J. Miller, commercial sales manager of the Fort Worth, Tex., branch of Frigidaire Sales Corp., has been promoted to manager of the Oklahoma City branch. Mr. Miller succeeds D. T. Hayward, who is resigning.

Mr. Miller had been associated with Frigidaire's Fort Worth distributing organization for 18 years as service manager, manager of national user sales, and, since 1941, as commercial sales manager.

COMING AND GOING

Ed Flannery, new president of the Refrigeration Equipment Manufacturers Association, smiles happily as he shakes hands with his predecessor, retiring president Herman Spoehrer. Mr. Flannery, who will guide the association's activities through the 1947-48 season, is vice president of Bush Mfg. Co. Mr. Spoehrer is vice president and treasurer of Sporlan Valve Co. Both men have long been active in REMA affairs.

ST. LOUIS JOBBER IN NEW LOCATION

Authorized Refrigeration Parts Co., St. Louis refrigeration supplies wholesaler, is in a new location at 301 South Vandeventer, St. Louis 10. L. W. Krueger and H. F. Brockgreitens are partners in the company.

500-LOCKER TEXAS PLANT

A contract has been let for construction of a frozen food locker plant in Wills Point, Tex., to be owned and operated by J. D. Brownlee and C. E. Duncan of Shreveport, La. The building will have 500 locker units and provide space for processing.

longer life...

Jarrow...

Refrigerator Door Gaskets Are Again Made From Crude Rubber

Always Demand These Quality Gaskets

JARROW PRODUCTS

420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

SUB-ZERO FREEZERS

MODEL 16V

A 16 cu. ft. capacity upright model with white baked enamel finish. Has four inner compartments, 4 cu. ft. each, with individual doors.

BETTER FREEZERS AT A BETTER PRICE!

There's a waiting market for a freezer line that fulfills the qualifications of high quality, modern design and the right price. And Sub-Zero's complete line of farm and home freezers fully meets all these requirements. Uprights and chest types, white baked enamel and all-aluminum natural finishes, and a variety of capacities — you'll find them all in Sub-Zero. Backed by 20 years of experience in the refrigeration field, and bringing all the latest improvements, these dependable, precision-built freezers have won the enthusiastic approval of users everywhere.

Write for available dealerships

SUB-ZERO-FREEZER CO., INC.

MADISON, WISCONSIN, U. S. A.

AIRSERCO

Short cuts for the service engineer

THERMOSTATIC CONTROL TESTER

Model 3100 — A precision pocket-size Tester that detects and analyzes thermostat defects without removing the control from the cabinet. Saves blind tampering with thermo controls.

ANALYZER — A "must" service instrument that starts up defective compressor units without tearing apart the motor assembly. Starts both hermetic and open-type units up to ½ h. p. under actual working conditions — and may be left on the job for emergency service. 56 starting combinations.

VALVE ANALYZER — A revolutionary time-saving instrument that tests and sets the superheat requirements for *all* types of Thermostatic Expansion Valves. Provides laboratory accuracy on the job—eliminates all guesswork.

STEEL TANK HOLDERS

Facilitate the SAFE transfer of refrigerants in the shop and on the job. Lightweight, free-standing, portable, and color coded.

SEND FOR CATALOG A-47

AIRSERCO MANUFACTURING CO., INC.

435 MELWOOD ST., PITTSBURGH 13, PA.

EXPORT OFFICE: Melchior, Armstrong, Dessau Co., Ridgefield, N. J.

BRANCH OFFICES: Boston, New York, Pittsburgh, Cleveland, Knoxville, Minneapolis, Los Angeles

GET THE JOB OPERATING FASTER!

NEW

PREMIER KIT

RECONDITIONS . . . Recessed or Flush Valve Ports in MINUTES!

Now you can easily grind, finish and test recessed or flush valve seats (either piston or flapper jobs) . . . get' em back into action *faster* . . . and make satisfied customers! No more tiresome hand-lapping.

The Premier
SELF ALIGNING VALVE GRINDING KIT

COMPLETE SET PACKED IN HANDY CASE

Contains self-aligning tool holder . . . 6 abrasive wheels for roughing . . . 6 cast iron lapping disks . . . two 3" cast iron lapping blocks . . . 1 wheel dresser and 1 valve tester. Complete instructions enclosed for handling ½" to 1¼" valve seats.

See it at your jobber!

THE PREMIER CO.
891 PARK AVENUE
BALTIMORE 1, MARYLAND

NARC REPORTS ON "CONTRACT" CHARGES

Examples of how much is currently being charged annually on maintenance contracts were reported in a recent NARC news letter in response to inquiries. "One firm charges $12 per unit for household refrigerators," it was reported. "On commercial jobs, around $40 for ¼ hp to around $60 for 1 hp with one valve and $7.50 for each additional valve.

"Another firm has annual charges as follows: on household refrigerators, $15 for one, with $12 per unit for two and $10 per unit for three or more. On commercial jobs $25 per unit for ¼ and ⅓ sizes, $35 for ½ and ¾ sizes, $45 for 1 hp and $60 for 1½ to 2 hp. Anything larger must be given special consideration in the light of what might happen due to age, use, condition, etc."

DETROIT ASSOCIATION MEMBERSHIP GAINS

With admission of four new members and reinstatement of one former member during April, membership in the Refrigeration Contractors Association of Detroit has been increased by nearly 30% in the past five months, according to Frederick R. Bolton, secretary. Fourteen new memberships in all were approved during the period.

New applications approved at the April meeting included Ackerman Refrigeration Co., Buhl Sons Co., Forsythe & MacAnally, Kenzie's Refrigeration Service, and Wood Refrigeration Service.

NEW COMMERCIAL FIRM OPENED IN FLORIDA

W. J. Godfrey, Sr. and his son, W. J. Godfrey, Jr., have started Godfrey Commercial Refrigeration Co. at 1940 Central Ave., St. Petersburg, Fla. The firm will specialize in Westinghouse equipment. Mr. Godfrey Sr., was with Carrier Corp. for 17 years, and during the recent war supervised refrigeration installations at North Carolina Shipbuilding Co. Mr. Godfrey Jr., was in the Navy submarine service.

NOW AVAILABLE
FOR IMMEDIATE DELIVERY

FLO-KOLD
FOOD FREEZERS

All steel construction. Full, thick insulation, hermatically sealed.

12 - 14 - 16 - 22 - 26 cubic ft. sizes

Distributorships available in several localities.

Send for Catalog and Prices.

RATHBUN
REFRIGERATION COMPANY
325 SCRIBNER AVENUE, N.W.
GRAND RAPIDS, MICHIGAN

SHANK VALVES

AVAILABLE NOW!
for
IMMEDIATE SHIPMENT
COPPER DEHYDRATORS

2" O. D.—Copper Tubing with ¼" & ⅜" Flare Fittings. Ends—Brass Forgings with large hexagon area for *Easy Service Mounting.* Copper Tube sweat fitted to forging. Brass screens and felt filter.

1" O. D.—Spun End Copper Tube—Brass End Fittings properly proportioned and silver soldered. Brass screens and felt filter.

If Your Jobber Doesn't Stock—Write Us.

CYRUS SHANK COMPANY
631 W. Jackson Blvd. Chicago 6, Ill.

Continued from page 48

WB, which check with the calculated values.

(c) Room Condition of 82F WB—64F DB

The calculations for this room condition by the use of Formulas 8 and 9 are shown below. Since a total of 2500 cfm are required, the mixture entering the cooling coil will consist of 350 cfm of outdoor air and 2150 cfm of room air.

$$t=\frac{(95\times350)+(82\times2170)}{2500}=84.0\text{F DB}$$

$$h=\frac{(38.50\times350)+(29.25\times2170)}{2500}=$$

30.5 Btu/lb. dry air

The wet-bulb temperature corresponding to this heat content value is 65.7 F.

These values are checked on the psychrometric chart in Figure 2 (May issue). The line between the points representing room and outdoor conditions measures 2¾". Inasmuch as the outdoor constitutes $^{350}/_{2500}$, or 14% of the mixture, we measure off from the point represented by room conditions a distance equal to 2¾" × .14 = .385", or approximately ⅜". The coordinates of this point are 84.0F DB—66.7F WB, which check with the values calculated for the mixture.

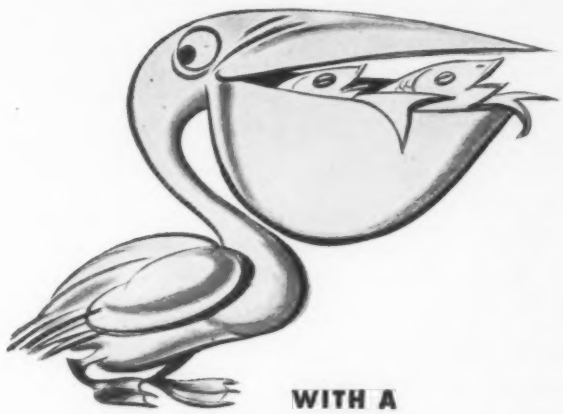
SUMMARY OF REQUIRED AIR PROPERTIES: We now have assembled sufficient data to enable us to select the proper direct expansion coils from the performance tables of coil manufacturers. For the sake of clarity, this information is collected together in the table on the next page.

CONDITION CURVES: It will be informative at this point to plot the *condition curves* for the various air supply states. A condition curve is a graphic representation on the psychrometric chart of the condition of the air as it passes through the cooling equipment. Naturally, the point of intersection of the condition curve with the ratio line will be at the point representing the state of the air supply.

In direct expansion systems, the temperature of the refrigerant within the coil is practically constant throughout all the tubes of the coil,

NEED GAS?

"Fill it and Forget it"



WITH A

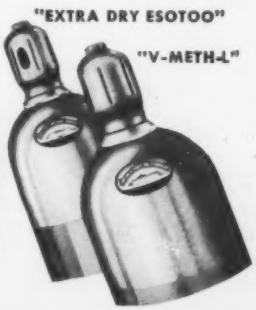
Virginia Refrigerant

Here's a recipe that will help reduce the number of costly service call-backs. Ask for and get Virginia Sulfur and Methyl, the refrigerants that are pure. Every cylinder is triple-tested to eliminate dirt, oil, and moisture which causes sludging, copper plating, frozen expansion valves and other common troubles. Virginia Refrigerants are world-renowned for purity and dependability. Buy them from your wholesaler. VIRGINIA SMELTING COMPANY, West Norfolk, Va. *Established 1898.*

Distributors for Kinetic's "Freon" Refrigerants

"EXTRA DRY ESOTOO"

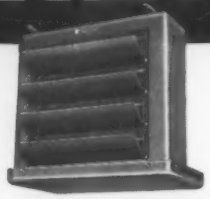
"V-METH-L"



VIRGINIA Refrigerants

WEST NORFOLK • NEW YORK • BOSTON • DETROIT

Beauty plus
UTILITY



Larkin refrigeration products are modern proof that engineering beauty can add to functional efficiency. Originator of the Cross Fin Coil, Larkin also produces highest quality in Humi-Temp Forced Convection Units—Bare Tube and Zinc Fused Steel Plate Coils—Evaporative Condensers—Air Conditioning Units—Instantaneous Water Coolers—and other superlative equipment for commercial and industrial refrigeration.

THE WATCHDOG OF THE NATION'S FOOD SUPPLY

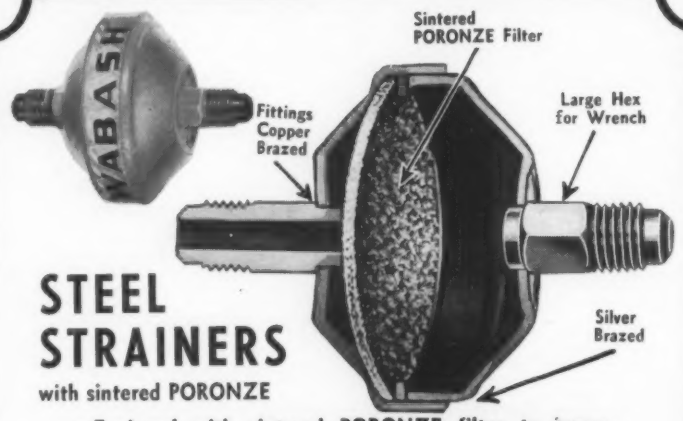
LARKIN COILS
519 MEMORIAL DRIVE · S · E ·
ATLANTA · GEORGIA

Summary of Required Air Properties

	80F DB-67F WB Room	81F DB-66F WB Room	82F DB-64F WB Room
Entering air dry-bulb temperature	81.5 F	82.5 F	84 F
Leaving air dry-bulb temperature	62.5 F	59.6 F	54.3 F
Entering air wet-bulb temperature	67.8 F	67.2 F	65.7 F
Leaving air wet-bulb temperature	60.5 F	57.8 F	52.8 F
Air volume	4000 cfm	3300 cfm	2500 cfm

and is a function of the suction temperature at which the system is operating. The temperature of the metal at the surface of the coil, however, does not remain constant but varies with the temperature of the air passing through the coil. Since the temperature of the air drops as it flows through the coil, and inasmuch as the surface temperature always lies between the refrigerant temperature and the air temperature, the surface temperature decreases in the direction of the air flow. This constantly changing surface temperature means that the graph representing the condition of the air passing through the apparatus will not be a straight line.

The condition curves for the three room conditions are shown as dotted lines on Figures 1, 3 and 4 (May issue). These lines start at the point representing the air entering the coil, and curve gradually downward until they intersect the saturation curve, first passing through the point represented by the state of air leaving the coil. The point where the condition curve intersects the saturation curve represents the temperature of coil surface existing where the air leaves the coil. If the cooling apparatus were long enough, it would theoretically be possible to obtain saturated air in the state represented by this point of intersection. In actual practice, however, the air usually leaves at a state represented by a point near the 90% RH curve.



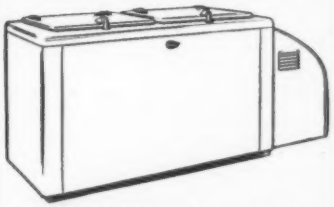
STEEL STRAINERS
with sintered PORONZE

- Equipped with sintered PORONZE filter to insure removal of dirt, scale and sludge with a minimum pressure drop.
- All-steel construction with hydrogen brazed fittings assures clean, flux-free interior.

ORDER FROM YOUR LOCAL JOBBER

WABASH
MANUFACTURING CO.
2642 S. Michigan Ave., Chicago 16, Ill.

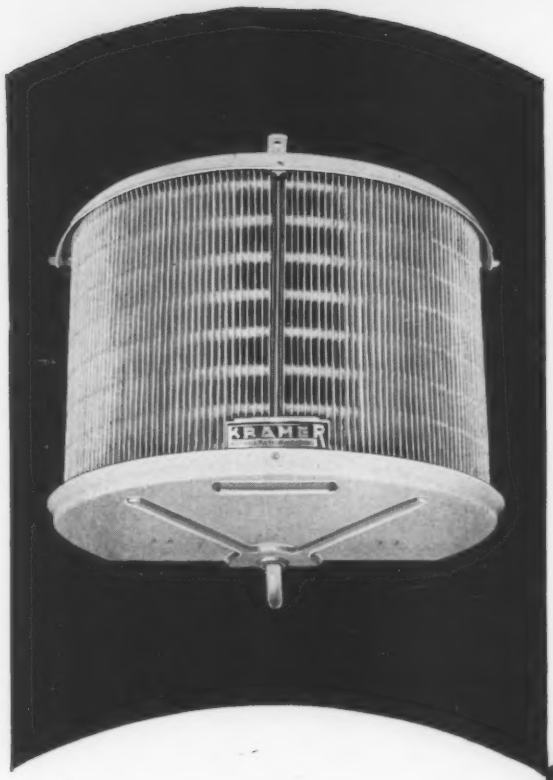
Sanitary Quicfrez



The PIONEER of Farm Locker Plants Now Ready for Immediate Delivery

COMPLETE, with Condenser Units—ready for you to install. EVERYTHING about the "QUICFREZ" Farm Locker Plant is engineered and built for years of dependable service. Thousands in daily operation since 1939. PLACE YOUR ORDERS *NOW!*

SANITARY REFRIGERATOR COMPANY
FOND DU LAC
WISCONSIN
Ice Refrigerators for More Than 40 Years
Quicfrez Farm Lockers Since 1939

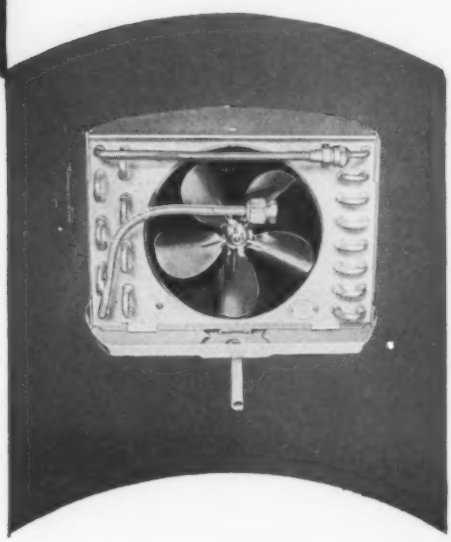


The New CURVETTE *by* KRAMER

COMPACT
Fan and motor are located out of sight, out of the way, inside the curve of the coils.

ATTENTION-FREE
Motor is permanently lubricated.

ACCESSIBLE
All connections are easily reached.



GOOD-LOOKING
Note the pleasing appearance of this neatly curved semi-circular unit.

WELL-MADE
Tubes are copper; fins and framework are aluminum.

EFFICIENT
Radial airflow assures uniform refrigerator temperatures.

LOW PRICE
Due to specialized, quantity production.

PROMPT DELIVERY

FOR BEVERAGE COUNTERS, FOOD CHESTS, REACH-IN REFRIGERATORS, etc.

KRAMER TRENTON CO. Trenton 5, New Jersey

Keep Your Business GROWING

Whether you sell or use them, *Texaco Capella Oils* will keep your business growing. The reason is plain and the fact proved everywhere – *Capella Oils* do so much to assure efficient compressor operation that they ring the bell steadily with repeat sales and new business.

Texaco Capella Oils have everything your customers want – stability, freedom from moisture, very low pour tests, non-reaction with refrigerants – and every viscosity you need. In addition, the convenient 1-qt., 1-gal. and 5-gal. containers have *re-sealable* caps to keep unused oil in proper condition indefinitely.

Leading compressor manufacturers approve *Texaco Capella Oils* . . . and distributors and dealers everywhere stock them for immediate delivery. For information, call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write:

☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO Capella Oils

FOR ALL AIR CONDITIONING AND REFRIGERATING EQUIPMENT

TEXACO

Tune in . . . TEXACO STAR THEATRE presents the NEW TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

Eston
REFRIGERANTS

WHAT
YOU WANT...
WHEN
YOU WANT IT!

SULPHUR DIOXIDE

METHYL CHLORIDE

METHYLENE CHLORIDE

Distributors of
FREON 11 - 12 - 22 - 113

Better Performance because of Low Moisture Content

You'll like the convenience and speed of Eston service. In addition you'll find Eston products perform better. Low moisture content and sustained high quality mean more efficient operation—in both new equipment and refrigeration units already in use. Ask your supplier for Eston refrigerants or write for complete information.

The West looks to Eston for chemicals

Eston
CHEMICALS, INC.
3100 East 26th Street
Los Angeles 23, California

THE PRACTICAL Refrigeration Engineering MANUAL

... by Harold Smith

XVII. Truck Refrigeration

PART II

REFRIGERATED truck bodies should be classified in two general groups: low-temperature bodies, used to transport ice cream or frozen food products, requiring a temperature range from —15 F to +5 F, and commercial-temperature bodies, used to transport meats, fish, sea foods, dairy products and other perishable foods requiring a temperature range from +35 F to +45 F.

In each of these classifications are bodies built for long distance transport, or bodies for service deliveries, usually covering comparatively short hauls with frequent stops for delivery.

LONG DISTANCE HAULS

Long distance hauls may keep the body away from its home base for several days or weeks. Under such conditions the refrigeration plant must be carried by the truck.

As temperatures rise, stops are made to allow the refrigeration machine to lower the body temperature to hold the product at the proper temperature, if the condensing unit is powered by an electric motor requiring electric line service.

With a gasoline-motor power unit driving the condensing unit, operation can be made automatic, a starter switch turning over the gasoline motor whenever the temperature rise inside the body closes the thermostatic switch.

This type operation, or a drive connected with the truck drive shaft, provides refrigeration when needed, regardless of where the truck may be when temperatures must be reduced.

Bodies designed for short-haul service deliveries usually return to their base of operation every night, making it possible for all cooling to be handled from a condensing unit located in the plant.

Bodies carrying the condensing unit are designed to include a special compartment for this purpose located wherever provided for in the plans.

CONDENSING UNIT LOCATION

The condensing unit may be located under the body, at the rear of the body, on top of the cab or sometimes in a compartment built under the cab.

The bodies may be built with one large compartment, or with partitions making several compartments, each one entered by a separate door. Several compartments are desirable where the body is used to carry different temperatures for different products.

When truck bodies are cooled with plate coils, the plates are arranged to cover as much wall or ceiling area as possible. Plates installed horizontally from the ceiling are set so they slope to one end, thus helping provide a fast circulation of air.

PLATE ARRANGEMENT

Plates installed vertically are usually arranged along the walls, but may also be used as partitions where more than one section is used for storage. Plates are usually hooked up to carry a flooded condition, the liquid entering at the bottom and suction gas leaving at the top.

The plates may be installed to operate in parallel with an individual expansion valve feeding each plate, or in series with one expansion valve feeding the entire system and one plate feeding the next one through the entire system.

Care must be used to see that

HARTFORD JOBBER HOLDS OWN "SHOW"

Joseph Simons Co., Hartford, Conn. refrigeration supplies wholesaler, recently held a special showing at the Bond Hotel of various refrigeration products which it sells and distributes, and which could not be displayed to best advantage on its own sales floor.

The showing, held from 10 a.m. to 5 p.m., attracted a good attendance. Products shown included Gemco air conditioners, Heat-X-Changer Co. equipment, including a cafeteria water cooler, Cope freezers, Coolstream and Temprite water coolers, and Air-Rite beer pumps. It is planned to hold a second showing at a later date.

RECO OFFICES MOVED

General offices of Refrigeration Engineering Corp., manufacturer of commercial refrigeration equipment under the "Reco" mark, has moved to new general offices at 2024-26 Market St., Philadelphia 3.

expansion valves of the proper size and capacity are used to assure a volume of refrigerant ample to take care of the load requirements.

Bodies having two or more compartments are usually installed with separate plates, expansion valves, and controls for each compartment, thus enabling the operator to provide any desired temperature in each compartment. The same general theory is followed where either pipe coils or blower-type coils are used.

Pipe coils usually are installed in low-temperature installations. Blower-type coils may be used with either low temperature or commercial temperatures. The defrosting of blower-type coils must be provided for, on low-temperature installations.

FORCED AIR CIRCULATION

The forced circulation of air through the relatively small face area requires that the face area be free from frost accumulation. If frost partially covers this face area, efficiency of the coil is seriously impaired and grows increasingly more serious as the frost continues to accumulate.

Blower-type coils usually are suspended from the ceiling or against the front wall of the body near the ceiling. It is usually desirable to have the coil set so that the air stream is not directed towards the opening doors.

FAN MOTOR OPERATION

Fan motors, on blower-type coils used in truck bodies, can be kept in continuous operation if a fan motor running on 6 or 12 volts is used and connected to the truck battery. Doors on truck bodies must be kept closed and only opened for the shortest possible period of time while loading or unloading.

The refrigeration engineer uses the same methods, for developing load requirements for truck bodies, that he uses in figuring any refrigeration equipment. The total load requirements for heat leak, service load and products load must be figured out to arrive at the complete refrigeration requirements.

EQUIPMENT SELECTION

After determining the total load requirements it is necessary to select equipment with sufficient capacity to handle the load. Plate coil manufacturers furnishing plates with eutectic solutions have tables giving the Btu capacity and the latent heat per pound of the eutectic used to handle the heat load.

Air-cooled type condensing units are used on all portable truck installations. With careful attention to all details and accurate load calculations, the engineering of refrigerated truck bodies offers very little more difficulty than any other refrigeration calculations.

OPPORTUNITIES UNLIMITED

Every indication points to wide and ever increasing use of refrigerated truck bodies. This field offers great future possibilities for the refrigeration industry. As new frozen products appear on the market, the demand will rapidly increase.

Prospects for regular home deliveries of frozen foods to be stored in the frozen food compartment found in all late model home refrigerators and in frozen food boxes or cabinets which have been purchased extensively in the last several years, all add to the general increased use of refrigerated truck bodies.

These trends insure ever increasing opportunities for the sale and installation of refrigeration equipment, and also will greatly expand the future demand for service and maintenance work in this field.

Simplified

CAPACITOR REPLACEMENT

• This Aerovox motor-capacitor replacement kit breaks all records for such servicing, because . . .

1 If refrigerator motor can be identified by nameplate or otherwise, you can use one of the Aerovox Emergency Units (in background) for just the right capacitance value, until permanent capacitor is at hand.

2 If defective capacitor cannot be identified, you can ascertain the right capacitance value for quickest start with safety, by means of the Aerovox Capacitor Selector (foreground).

3 And at your convenience, you can install the permanent Aerovox exact-duplicate or universal capacitor.

• Ask Your Jobber . . . .

Ask for latest Aerovox Catalog. Ask to see this jiffy-service capacitor replacement kit. Or write us direct.

AEROVOX capacitors

RADIO-ELECTRONIC AND INDUSTRIAL APPLICATIONS

AEROVOX CORP., NEW BEDFORD, MASS., U.S.A.
Export: 13 E. 40th St., New York 16, N.Y. • Cable: 'ARLAB'
In Canada: AEROVOX CANADA LTD., Hamilton, Ont.

ONLY REVERE DRYSEAL GIVES YOU ALL 3

REVERE Dryseal Copper Refrigeration Tube is made of deoxidized copper (99.9+% pure) and is kept oxide-free by special processing methods. Each length is carefully dehydrated during manufacture, and then immediately sealed at both ends to keep all moisture and other foreign particles out. Because Revere Dryseal is dead soft, it is easy to bend and can be flared for compression fittings without splitting at the end.

In addition, Revere gives you two *extra* advantages: (1) National advertising in The Saturday Evening Post, Business Week, Fortune, Journal of Commerce and many other widely-read publications constantly tells your customers that the name Revere on the products you use is proof of their high quality. (2) The Revere Technical Advisory Service is always ready to work with you in solving your difficult problems.

Revere Dryseal Copper Tube is made for refrigeration, air conditioning, heat control and other services. It comes in sizes from ⅛″ to ¾″ O.D. with .035″ wall, and is standard in 50 foot coils. Revere Dryseal and the many other Revere products are handled by leading distributors throughout the country.

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The highest quality dehydrated copper tube —dry, clean, dead soft and seamless.

National advertising telling your customers that when you use Revere products you use the finest.

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TO MANUFACTURERS—The Revere Distributor in your locality is prepared to give you cooperative service on your needs for Revere Copper Tube, Brass Rod, Welding Rod and other standard Revere products.

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PROTECTS FROZEN FOODS

The exclusive, self-contained warning system . . . sounds an alarm whenever temperature rises above danger zone FROM ANY CAUSE. Not connected in any way with electrical system! Every freezer owner and locker plant needs one. Liberal dealer discounts, literature available.

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25 North Peoria Street—Chicago 7, Illinois

MINERALLAC

WEST COAST SHOW . . .

Continued from page 38

Los Angeles. "This will call the attention of national manufacturers to the importance of our great southwest."

"I think the show has been very good, and the exhibits excellent," said J. P. Rainbault, The John P. Rainbault Co., San Francisco, representatives for Ebco water coolers. "I'm very much in favor of making this an annual event with the show rotated between the Los Angeles and San Francisco areas, and perhaps Seattle."

"We've had a good turnout with a great deal of interest being shown in equipment," Roy Hallberg, regional sales manager for Refrigeration Corp. of America, Los Angeles factory branch, stated. This is one of the first showings of the company's third dimensional super-structures and Mr. Hallberg reported a very favorable reception.

"The show has been twice my expectations," said Vernon Denny, Denny Bros., Pasadena. "I didn't expect more than 1000 persons to attend the show, and more than twice that number have passed through. There has been a favorable reaction throughout the trade, and I expect a much better show next year. We learned the hard way in putting on this show and we are going to profit by our experience in putting on next year's exposition. An annual trade show is going to be the answer for the western states. We've had a grand attendance and our effort and time has been more than repaid."

Exhibitors showing at the exposition were:

Pacific Lumber Co., San Francisco, Palco wool; Ultra Violet Products, Inc., Los Angeles, sterile air lamps; J. H. Batteiger Co., Los Angeles, manufacturers' representative; Kurt Rose, manufacturers' representative, Los Angeles, representing Polar Hardware, All-Steel Equip., Inc., Joliet Chemicals Co., Airserco Mfg. Co., Inc., Superior Valves & Fittings, Los Angeles; General Controls Co., Glendale, Calif.

John P. Rainbault Co., San Francisco, Ebco water coolers; Denny Bros., wholesalers, Pasadena, Calif., representing Federal Refrigerator Mfg. Co., Minneapolis Show Case Co., Regal Meat Saws; Refrigeration Corp. of America, Los Angeles factory branch, home and farm freezers, frozen food display cases; Neilson Equipment Co., Los Angeles, bottle coolers, beer coolers; International Coil Co., Los Angeles; Wilkins Distributing Co., Los Angeles; Worthington Pump and Machinery Corp., Harrison, N. J., refrigeration and air conditioning equipment; Glacier Lock-

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Thousands of *portable* ultraviolet Vanol Purofyers are profitably *at work* throughout the country killing air-borne bacteria . . . destroying odors . . . eliminating spoilage conditions . . . and protecting the purity of products in restaurants, meat markets and locker plants . . . in display cases and coolers.

These Vanol *Portable* Purofyers, backed by a pioneer company in the national promotion and acceptance of bacteria-killing lamps, have a profitable sales potential for you. Vanol's complete, established line of Purofyers for air and product sterilization are proven profit producers.

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Only Chicago valve plates have replaceable seats.
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er Plant, Long Beach; Coldew Corp., Los Angeles, Coldew products; Ralph M. Westcott Co., Los Angeles, water treatment.

Imperial Brass Co., Chicago, valves and fittings; Willis Refrigeration Service, Long Beach, Coldspot replacements; General Tire Co., Akron, Frostair duplex refrigerator; Van D. Clothier, Los Angeles, manufacturers' agent; Universal Freezers, Los Angeles; Servel, Inc., Evansville, Ind., commercial units; Franklin G. Slagel Co., Los Angeles, manufacturers' agents; Long Beach chapter, RSES, school training program; Carl-Craft Co., Los Angeles, frozer food display cases.

Frigidaire Sales Corp., Los Angeles, domestic and commercial units; A. W. Sheet Metal Co., Los Angeles, soda fountains; Royal Refrigeration Co., Los Angeles, commercial units and Gemco air condition ing; Handy & Harman, Los Angeles, welding materials, Sil-Fos and Easy-Flo; Metrex Valve Co., Franklin Park, Ill., expansion valves.

Hal Clay, Los Angeles, Dole cold plates; J. J. Griswold Co., San Diego; Shield Ultra Violet Engineering Co., Los Angeles; Pacific Factors, manufacturers' agents, San Francisco; Perfecold Refrigeration Co., Los Angeles, commercial refrigeration and home freezers; U. S. Grant Supply Co., Los Angeles, wholesalers; Russell Sales Co., Los Angeles, manufacturers' agents; Sunroc Refrigeration Co., Glen Riddle, Pa., water coolers; Weber Showcase & Fixture Co., Inc., Los Angeles, display cases, refrigerators, soda fountains; Vico Refrigerator and Mfg. Co., Los Angeles.

The California Association of Refrigeration Service Engineers Society was organized less than a year ago with 500 members in the seven affiliated chapters. At the first annual convention it was reported that membership exceeds 1000, and affiliated chapters now number 15.

The convention program was highlighted by talks by Paul Reed, International Educational Director of the society, and Dr. W. O. Walker of Ansul Chemical Co., who spoke on "Expansion Valve Troubles Due to Solids."

Officers for the next association year elected at the convention are: J. Pat Riley, Long Beach, president; Rowland F. Cooke, San Francisco, first vice president; Ansel H. Brundage, Fresno, second vice president; Gerald Kennedy, Sacramento, re-elected secretary; Vernon Denny, Pasadena, assistant secretary; M. R. Hanks, San Diego, re-elected treasurer; Everett Brown, Compton, re-elected sergeant-at-arms, and Merle Soden, educational director.

Elected to the board of directors are: Jimmie Rodgers, Los Angeles; Stillman Peck, Pomona; L. L. Kannon, Bakersfield; Norman Overwesser, Salinas; Allyn Schoen, Sacramento, Frank A. Frazier, San Bernardino, and William Wharton, Oakland.

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There's no guesswork about the superior operating efficiency of BEN-HUR Farm and Home Freezers. Long before you deliver and install them, each has a definite laboratory record on file at the factory . . . A file that shows, for instance, that each is tested to cycle on only a 1° temperature change instead of the ordinary 5° regarded as excellent control by most standards. Huge Ben-Hur laboratory test rooms prove the advanced engineering and skilled craftsmanship that assure you the finest of home freezers in a BEN-HUR.

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Sample of the finished product is drawn from 145-pound cylinder for qualitative analysis.

This ton drum of "Freon" contains only about one-third of an ounce of moisture!

Technician feeds "Freon" sample through infra-red beam as spectrophotometer dial records moisture absorption of the ray.

of "FREON"

POSSIBLE AND PRACTICAL

Samples analyzed with infra-red rays prove "Freon" refrigerants contain almost no moisture

"Freon" refrigerants have long been known for their exceptional dryness. Now, to meet the need for lower temperatures to store frozen foods in household quick-freezers and locker plant refrigerators, these refrigerants are made drier than ever before . . . containing less than 10 parts of moisture in a *million* parts of "Freon"!

Because frozen food compartments held at 10°F. or less require lower evaporator temperatures and the temperature of expansion valves (small capillary tubes) is at least 15°F. lower than previously used in electrical refrigeration, the dryness of the refrigerant has become even more important than in the past. Moisture *must* be kept out of the system to prevent formation of ice in valves and tubes.

As a result of extensive research, and with the installation of additional manufacturing equipment, "Freon" refrigerants now are produced virtually anhydrous. To determine their minute moisture content, a simple, fast, accurate and reliable specification method was devised.

This utilizes a spectrophotometer in which moisture-absorbing infra-red beams are passed through samples of "Freon." The instrument measures the amount of water present with an accuracy of *one part per million*. It allows both control of production and analysis of the finished product . . . insuring the quality, purity and dryness of every ounce of "Freon" for commercial, industrial and household applications. For technical data, write — Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington 98, Delaware.

OUTSTANDING FEATURES OF "FREON" SAFE REFRIGERANTS

1. Freedom from moisture . . . now less than 10 parts per million.
2. Narrow boiling point range—confined within limits of ½°C.
3. Less than 2% of air in vapor phase.
4. Freedom from acids. There are none in "Freon".
5. Freedom from high and low boiling products.
6. Non-toxic . . . non-flammable . . . non-explosive.

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"Tested-by-Use" performance of more than 12 million Ranco Controls is ample proof that no *single control* can adequately meet all the requirements of the refrigeration and air conditioning industries.

Ranco's experience proves that only through controls designed for specific types of jobs can the highest efficiency and accuracy and longest life be obtained.

That is why Ranco supplies exact or general type replacement controls for every kind of cooling or freezing unit.

Because Ranco Controls are always right for the job they give better all-around performance and function for more years.

See your wholesale supplier—he knows the exact Ranco Control for installation on any job—and he has it in stock.

Illustrated above: Ranco Control 0-1408. For ice cream freezers, frozen food lockers and refrigeration units where temperatures as low as -40° must be maintained.

Ranco Inc.

COLUMBUS 1, OHIO

"Let's share our knowledge—exchange our experience"

Here's how

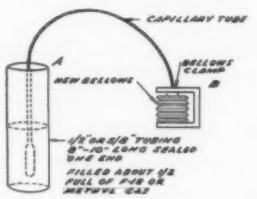
THE SERVICE MAN'S DEPARTMENT

HERE is a drawing of a simple device I have made for changing bellows on GE controls or any control or device where it is necessary to keep bellows from over-expanding due to pressure of refrigerant in the bellows.

"A" is a piece of copper tubing (½ or ⅝") about 8 to 10" long, and closed at one end.

"B" is a bellows assembly in a clamp as it comes for replacement.

Tube "A" is filled about half full of F-12 or methyl gas, or any odorless refrigerant; or SO_2 could be used where there is sufficient draft to carry away the fumes. The bulb or coiled end of the bellows tube is slowly immersed in the liquid.



This reduces the temperature of the bulb to around -10 to -20 F and brings the pressure in the bellows to a very small amount. By keeping the bellows tube in the refrigerant, there is plenty of time and it is very easy to make the exchange.

A word of caution: Fill the tube slowly by inverting the refrigerant drum. Keep faces and eyes a safe distance away. Immerse bulb slowly, as refrigerant boils violently when coming in contact with a warm object.

—G. A. Langer, Manchester, N. H.

Editor's Note: If you do any considerable amount of this work, it's probably better to keep the refrigerant in a thermos bottle rather than the type of container which Mr. Langer suggests. This is especially true if Freon is used; it's apt to be scarce this summer.

Edited by Warren W. Farr

Why Keep Records?

All of us have known refrigeration men—darn good technicians, most of them—who've gone in business for themselves, apparently with everything they'll ever need to get along first-rate. Within a few months, however, many of them just seem to fade out, and pretty soon they're not in business for themselves any more.

Statisticians who've studied the "why" of such early business failures say the principal reason for them is a lack of adequate records. Some small firms, they found, kept no records at all; others kept inadequate records.

Of course, it's true that even with the keeping of excellent records, some businesses fail. Good records alone won't insure a successful business; but they are an important contributing factor to success in any business, large or small.

Why keep records? Here are just a few of the reasons:

1. The owner can determine at any time whether he is making a profit or taking a loss.

2. He'll have the figures the bank will demand if he needs to borrow money.

3. He'll have information on which to base tax returns.

4. If he wants to take in a partner, he can furnish proof as to the wisdom of the proposed investment.

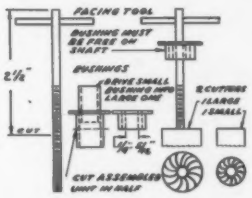
5. If, for any reason, he may want to sell the business, he'll have an accurate knowledge of its worth.

6. If he should die suddenly, adequate records will save his heirs extra trouble in settling the estate.

HERE is a refacing tool I rigged up for facing seats on Kelvinator water cooler spigot valves that had become pitted due to corrosion. The valves are somewhat expensive and also have been rather difficult to obtain, so I figure that the tool saves both time and money.

First, I bought a regular faucet refacing tool for 50 cents, with two facing tools that are interchangeable, and cut the stem or screw part off 2" from the top part, using the handle. Next I rounded off the rough saw so it would screw into either facing tool easily.

Then I used two old bronze bushings, one from a Delco motor (flange-type bushing), the other a



sweeper motor bushing. I drove the small bushing inside the large one, and cut both in half across the diameter.

Of course, bushings of different sizes can be used to suit different makes of water valves. The idea of the bushing is to keep the tool centered while facing the valve seat. The sketch, I believe, will show how the tool is made, and how it is assembled.

With the two sizes of cutters and a bushing set made from old motor bearings, you can reseat a variety of water valves at very little cost.

—J. C. Robinson, McKeesport, Pa.

Editor's Note: In selecting the bushings to be used, it is wise to select them of a material that is serviceable. This isn't much of a problem today with bushings of practically all types of metals being produced.

Too Much Oil?

One of the most puzzling problems we come across in the regular course of work is the matter of too much oil in circulation, particularly in systems using methyl chloride as the refrigerant. Probably most of us can recall times when we've diagnosed as "wet" system, heated the valve body and changed valves four or five times, and finally cleared up the trouble, luckily.

Not long ago we heard about a simple method that a service engineer had developed to test either Freon or methyl systems for excess oil. We'll pass it along to you:

Crack the flare nut from the receiver or dryer, and let a small amount of liquid out onto a piece of cardboard. If the oil-and-refrigerant mixture is normal it will vaporize quickly, leaving but little residue. However, if there is too much oil in the refrigerant a white waxy "snow" will form at the point where the mixture strikes the cardboard. Also, the moisture will seal the point where the nut was cracked, stopping the leak almost completely. Apparently this same thing happens at the expansion valve, causing the trouble to seem like a stuck valve, moisture, or something similar.

If the system is fairly small, it can be handled by blowing out the oil and refrigerant at the receiver and recharging. In larger systems, the answer is an oil separator.

ON SOME service calls, the mechanic will notice that the thermostat button is pushed out and the unit is not operating.

To remedy this trouble, the mechanic should not put a large heater coil element into the thermostat—this may burn out the motor, even though at the start the unit may operate satisfactorily.

The correct remedy is to check if there are not too many lights, appliances, etc. on the same electric line to which the refrigeration equipment is connected. Too many lights or appliances on the same line will cause a low voltage to the refrigeration equipment, and thus push thermostat button out.

To be more accurate, it pays to use a voltmeter to test if the equipment is getting sufficient voltage.

—Daniel Eisenberg, Brooklyn, N. Y.

The Trend Is to Refrigerated Trucks

With the trend toward more and more communities being served exclusively by trucks, refrigerated insulated trucks are becoming increasingly important in carrying perishables from the point of production or processing to the ultimate retail outlet. You'll get a better idea of just how important this is when you realize that today about 55,000 communities in the U. S. have only truck-line connections with the outside world.

In keeping with the recent advances in processing perishable food and dairy products, a considerable portion of the more than fivefold increase in ton miles handled by trucks since 1925 can be attributed to trucks equipped to maintain low temperatures.

Insulated trucks have come a long way from the early days of the industry, when it was necessary to carry huge loads of ice to preserve small pay-loads. Now, most of the over-the-roaders carry huge pay-loads and have their own built-in mechanical refrigeration units. For shorter hauls and many retail purposes, other methods of refrigeration are used.

Refrigerant Shortage

Shortage of refrigerant can cause the unit to operate but not refrigerate:

1. By causing the evaporator to frost up heavily and thus be less efficient.

2. By not having sufficient volume to fill the evaporator and as a consequence only a portion of the evaporator is used to absorb heat.

3. By causing the unit to run longer; longer running time causes the unit to get hot.

HELP WANTED

. . . By your fellow refrigeration service engineers. They can use your installation and applications ideas on refrigeration and air conditioning, your short cuts, shop practices, etc.

And there's money in it for you. REFRIGERATION INDUSTRY pays $5 for each idea published. Send yours to

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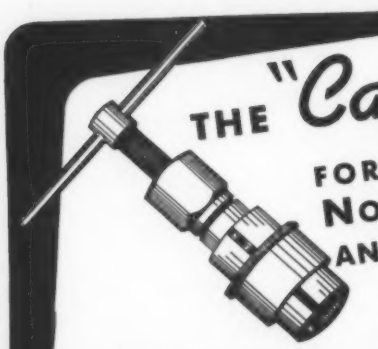

THE "Capson Tool"
FOR HARD TO REMOVE NORGE SEAL BUSHINGS AND DELCO OIL RINGS!

It's all so easy with the Capson Tool! Removes oil thrower rings from Delco 1/10 H.P. up. Removes bronze compressor bushings from Norge Rollators when replacing old seal with Rotary seal. Also used to remove Rotary seal rings when frozen to the shafts.

SERVICE MEN!
Here Is the Tool You Need

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The "Capson Tool" is made of cadmium plated steel, fully guaranteed and will last a lifetime. It saves time, tempers and money. Get *yours* today!

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KEEPING THE BOOKS . . .

Continued from page 35

Mr. Sincomb set about to pare down the discrepancy between hours worked and hours charged. Breaking down job tickets and checking them against the hours of labor for which the mechanics were paid, it was discovered that the firm was paying the men for much lost motion, odd hours in the shop, pick-up and delivery time, and similar items which, for the most part, it was difficult to charge off to any particular repair job. In many instances, for example, it had been found possible to charge only 20 hours of repair work to customers whose units actually required 36 or more hours of detail work to complete.

The solution which has been developed to cope with this problem—and which now has been applied to all five repair shops—is a policy of requiring each mechanic to do his own bookkeeping.

Service orders, whether received by telephone or over the counter, are written down in note form. The mechanic then makes a transcript of this order on a simplified work order form which is filled out in triplicate. The white ticket accompanies the job through the shop the yellow slip goes to the customer; the pink copy is kept in the firm's permanent files.

Each service man, as he does his work, enters parts cost and any other pertinent details, while on the back of the white slip he lists the number of actual hours of labor which that particular job requires. At the end of the week all job tickets are turned in, and the number of hours of actual work must be added up by the mechanic himself. He then compares this figure with the number of hours charged out on the customer's ticket and endeavors to make the two balance.

"Under this setup," Mr. Sincomb reports, "every mechanic can see for himself the difference between the hours for which he is paid and the hours for which we can charge the customer. The results have been that our mechanics waste less time in lost motion, more correctly distribute their work hours on final invoices—and we come up with a healthier profit figure all the way around."

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REDUCE WEAR ON:

1. Condensing unit motors
2. Condensing unit belts
3. Condensing unit control points and
4. Reduce consumption of electric current

A Temprite Equalizer Tank will overcome the short cycling condition caused when the load applied to the cooler or low-side is intermittent and of short duration. The tank acts as a suction gas storage tank between the low-side and the compressor. Can be installed on all types of refrigeration equipment. ⅛ hp. to 10 hp. condensing units. Approved by Underwriters'. Write for details.

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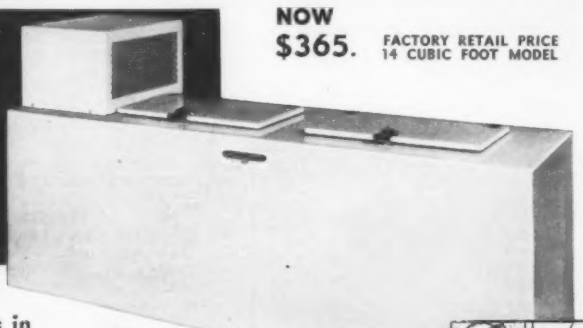

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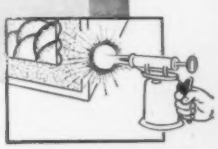
Here is a wide-open opportunity for dealers in selected territories to establish themselves in this growing industry. Home freezer lockers are fast sellers, especially to the farm and rural market.

You can be sure home freezer lockers are here to stay, but not all home freezer lockers. That's why it is important that you choose a quality line. The units you install now will be salesmen for you next year and in years to come. Masterfreeze COLDVAULT's low-cost operation, durability and dependable performance build customer satisfaction; build future sales for our dealers.

Masterfreeze stakes its future on quality. Handle a freezer your customers will boost. Colorful folders and display posters available. Write, wire or phone for details.

★ **MASTERFREEZE COLDVAULT SYSTEM**

In-the-wall freezing . . . 5-inch Zerocel insulation . . . chest-type Cold-Lok cabinet with heat repelling, rust-proof tempered Masonite exterior — results in unusual operating economy. Manufactured in the popular sizes — 14 and 19 cu. ft. models.



24 hours of blowtorch blasting doesn't change temperature inside the Masterfreeze.

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OPPORTUNITIES

Classified Advertising Section

Rates: for "Positions Wanted" $3.50 minimum, limit 25 words. For all other classifications $3.50 minimum for 25 words, each additional word 10c; boldface type or all capitals, $6.00 minimum for 25 words, each additional word 15c; limit 50 words. Box addresses count as five words. All insertions are payable in advance.

EQUIPMENT WANTED

WANTED—1 twin cylinder 3x3 Ammonia Compressor. 1—7½x7½ or larger Twin Hi Speed Ammonia Compressor. Both must be A-1 condition—York or Frick. Hollywood Candy Co., Centralia, Illinois.

EQUIPMENT FOR SALE

FOR SALE — Attractive Revolving Food Sign—Complete with Alphabetical letters and price tags. Enabling to make your own listings. 1. Will increase sales on freezers. 2. Added revenue for your salesmen and servicemen. Available to the trade only, write for our liberal discounts. M. S. Shore, 1985 Nostrand Ave., Brooklyn 10, N. Y.

AVAILABLE NOW—New 2½ & 5 Gal. Mills Freezers; 40 & 60 Gal. Hardening Cabinets. Bell Refrigeration Corporation, 18524 Detroit Ave., Lakewood 7, Ohio.

NEW COPPER-NICKEL TUBES
½" O. D. .050 Wall 78" Long
At 25c per lb.
FIN-TUBE RADIATOR CO.
42-44 Wooster St., New Haven, Conn.

FOR SALE—Air-cooled & Water-cooled, remanufactured condensing units, ¼ up to 2 H.P. Write for particulars, Edison Cooling Corp., 310 East 140 St., Bronx 51, N. Y.

Quality bobtail fountains; reach-ins, walk-in boxes—wood, metal; dough retarders; double duty cases—stainless steel, porcelain; dairy, florist, bakery cases; ice cream hardening cabinets; thermopane frozen food cases; milk, sandwich coolers; stainless steel back bars; with machines. Equipment made to special order. Frigitemp Corp., 901 Bergen St., Brooklyn 16, N. Y. MA 2-9093.

IMMEDIATE DELIVERY—New Air Conditioning Equipment. Weathermakers complete with motor, "Freon" coil, etc. 2 ton to 25 ton, SWSI, DWDI, and Twin Centrifugal Blowers, Propeller Fans, Heating and Cooling Coils, Evaporated Condensers, Self-Contained Air Conditioning Units. Condensing Units. CONTROLDTEMP CORP., 236 Butler St., Brooklyn 17, N. Y.

2—Used 15 H.P. refrigeration units, suitable for air-conditioning or cold room. Each unit consisting of 2—7½ H.P. compressors, 2 floor type blowers, 1 evaporative condenser and all necessary electrical controls and thermostats for operation. Frecker's Ice Cream Co., 555 E. Main St., Columbus, Ohio. Ad 1717.

Blower Coils—New, Forced Convection, Drayer-Hanson Coils, suitable in installations in Walk-In Coolers, in sizes ranging from 4,000 to 15,000 BTU, at 15 to 20 Deg. temperature differential. Attractive price and immediate delivery while they last. Act now! Refrigeration Engineering Corp., 2024 Market Street, Philadelphia 3, Pa.

FOR SALE: 12 - 16 - 19 - 22 and 26 cubic foot freezer cabinet. Write for list and prices. Rathbun Refrigeration Company, 325 Scribner Ave., N. W., Grand Rapids, Michigan.

FOR SALE

SERVICE BUSINESS — Wisconsin — 300 commercial customers—Repairing over 1000 household refrigerators per year—Business $1900. Inventory $1500. Shop Bldg. $900. Warehouse $1500. Box 6147, Refrigeration Industry.

REFRIGERATION DEALERS, SERVICEMEN: For $1.00 we will mail you a copy of our Co-Op service letter we mailed to all commercial refrigeration users. It brought us a pile of new business and members at $5.00 each and increased our business over 100%. MYERS ELECTRIC, Manitowoc, Wis.

REPAIR SERVICE

Refrigeration Controls and Valves Repaired. Complete service for all makes and types. Also Stoker and Oil-Burner controls repaired. All work guaranteed. Write for prices or just mail in controls. Acme Control Service, 5521 Lawrence Ave., Chicago 30, Ill.

PORT BUYS INTEREST IN BOSTON JOBBER FIRM

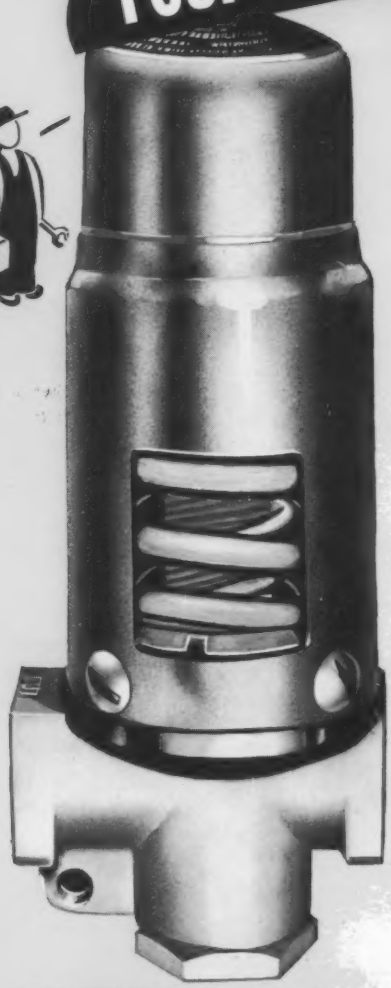
Nelson C. Port, formerly field engineer for Ansul Chemical Co., has purchased a part interest in Supply Distributors Corp., Boston refrigeration parts wholesaler, and will be manager of the firm's store there. Payson Cobe, former manager, will remain with the company as a salesman.

CANADIAN JOBBER IN NEW BUILDING

Railway & Engineering Specialties Ltd., refrigeration supplies wholesaler, has moved into a new building at 5754 Western Ave., Montreal, Que. The company also has stores in Toronto, Ont., and Winnipeg, Man.

Your Service Work is EASIER...

because (AP) REFRIGERATION VALVES ARE *Dependable*



SELF-CLEANING WATER REGULATING VALVE AVOIDS TROUBLE DUE TO DIRT AND LIME

Its many unique design and operating features place the new A-P Model 68-B Water Regulating Valve in a class by itself — for accurately controlling water flow in water-cooled condensing units.

INSURES YEARS OF DEPENDABLE SERVICE

Differing radically from conventional valve design, the Model 68-B employs a molded composition seal on the valve stem. This seal moves across the polished mirror-smooth stainless steel seat, to provide *self-cleaning* "wiping" action, thus avoiding common troubles due to dirt and lime in the water.

The Model 68-B has been laboratory tested in *sandy water* — the equivalent of many years of actual field use — and neither the sliding seal nor the seat show any sign of wear — indicating "lifetime" efficiency.

Put the Model 68-B on either new or present installations to improve operation and insure years of Dependable service. Ask your jobber about it, or write for Bulletin No. M100.

FEATURES OF A-P MODEL 68-B PRESSURE ACTUATED WATER REGULATING VALVE

Long Stroke gives closer, more uniform control.
Self-Cleaning action avoids troubles due to dirt or lime in water.
Wartime-proved packless "O" Ring valve stem seal
Chattering, water-hammer positively eliminated.
Drain plug permits valve flushing.
Flow not affected by compressor pulsations.
Head pressure range 50 p.s.i. to 150 p.s.i.
Adjusting nut easily accessible.
Used on Freon, Methyl Chloride, or Sulphur Dioxide systems.
Three sizes — ⅜", ½", ¾" inlet and outlet.

AUTOMATIC PRODUCTS COMPANY

2486 NORTH THIRTY-SECOND STREET • MILWAUKEE 10, WISCONSIN
EXPORT DEPT 13 E 40TH STREET, NEW YORK 16, N.Y.

(AP)

DEPENDABLE *Refrigerant Valves*

Stocked and Sold by Good Refrigeration Jobbers Everywhere . . . Recommended and Installed by Leading Refrigeration Service Engineers

Out of some cold figures, came a story to warm America's heart

NOT LONG AGO, the Secretary of the United States Treasury studied a figure-covered sheet of paper.

The figures revealed a steady, powerful upswing in the sale of U. S. Savings Bonds, and an equally steady decrease in Bond Redemptions.

But to the Secretary, they revealed a good deal more than that, and Mr. Snyder spoke his mind:

"If you give them the facts," he said, "you can always depend on the common sense and long-range judgment of the American people.

"The last few months have given us heart-warming proof of that.

"After the Victory Loan, sales of U. S. Savings Bonds went down—redemptions went up. And that was only natural and human.

"It was natural and human—but it was also dangerous. For suppose this trend had continued. Suppose that, in this period of reconversion, some 80 million Americans had decided not only to stop saving, but to spend the $40 billion which they had *already* put aside in Series E, F & G Savings Bonds. The picture which *that* conjures up is not a pretty one!

"But the trend did NOT continue.

"Early last fall, the magazines of this country—nearly a thousand of them, acting together—started an advertising campaign on Bonds. This, added to the continuing support of other media and advertisers, gave the American people the facts . . . told them why it was important to buy and hold U. S. Savings Bonds.

"The figures on this sheet tell how the American people responded—and mighty good reading it makes.

"Once more, it has been clearly proved that when you give Americans the facts, you can then ask them for action—and *you'll get it!*"

What do the figures show?

On Mr. Snyder's sheet were some very interesting figures.

They showed that sales of Savings Bonds went from $494 million in last September to $519 million in October and kept climbing steadily until, in January of this year, they reached a new postwar high: **In January, 1947, Americans put nearly a billion dollars in Savings Bonds. And that trend is continuing.**

In the same way, redemptions have been going just as steadily downward. Here, too, the trend continues.

Moreover, there has been, since the first of the year, an increase not only in the volume of Bonds bought through Payroll Savings, but in the number of buyers.

How about YOU? The figures show that millions of Americans have realized this fact: there is no safer, surer way on earth to get the things you want than by buying U. S. Savings Bonds regularly.

They are the safest investment in the world. They pay you $4 for every $3 at the end of 10 years. And you can buy them automatically, almost painlessly today, through either of two plans:

If you are eligible for the Payroll Plan, for your own sake and your family's sake, get on it . . . and watch your savings mount up.

If you are not eligible for the Payroll Plan, but have a checking account, see your banker and get him to tell you about the new Bond-a-Month Plan.

Either of them will set you on the road to financial security, and the happiness that comes with it.

Save the easy, automatic way—with U. S. Savings Bonds

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The Advertising Council